12

US Army Corps of Engineers
Hydrologic Engineering Center

Flood Damage Analysis Package on the Microcomputer

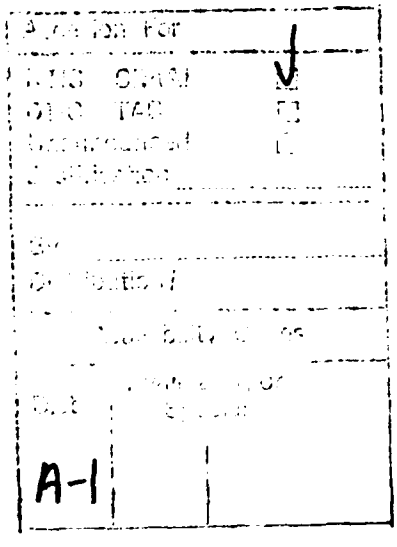
Installation and User's Guide

Training Document No. 31
September 1990

Training Document No. 31

Flood Damage Analysis Package on the Microcomputer

Installation and User's Guide



September 1990

US Army Corps of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, CA 95616

(916) 756-1104

Table of Contents

INTRODUCTION 1
PC Package Content 1
Overview of Modifications Since the July 1988 Release 2
Introduction 2
HECDSS 2
DAMCAL 2
MENUFDA 2
EAD 4
SID 4
SIDEDT 5
PIP 5
FDA2PO 5
DSPLAY 5
Purpose of Each Program 5
Flood Damage Analysis Computer Programs 5
Hydrologic Analysis Computer Programs 7
HEC-DSS (Data Management) Utility Programs 7
Program Support 8

QUICK START PROCEDURE 9
Computer Equipment Requirements 11
Hard Disk Organization 12

INSTALLING THE PC VERSION OF FDA 13
The Installation Program 13
Installing Device Drivers For Graphics 20

USE OF MENUFDA 21
Running MENUFDA 21
General Menu Program Description 21
Function and Cursor Control Keys 21
MENUFDA Associated Disk Files 26

DESCRIPTION OF MENUS IN MENUFDA 27
Banner 27
Select Study 27
Edit Study 28
Select Program 28
Define Data Files 29
Data Directory List 30
Default Data File Extensions 31
DAMCAL 31
EAD 32
SID 32
SIDEDT 33
DSSUTL 33
DSPLAY 34
FDA2PO 34
PIP 35
HEC-1 35
HEC-2 36
HEC-5 36

DSS5T6 37

REFERENCES 38

APPENDIX A: SUPPLEMENTAL COMPUTER PROGRAM INSTRUCTIONS 40
Introduction 40
DAMAGE REACH STAGE-DAMAGE CALCULATION (DAMCAL) 41
J3 Record: Third Job Record (Required Record) 41
ZW Record -- Write elevation-damage function to a DSS file 42
DT Record --- Damage Reach Title Record 43
File Assignments 43
EXPECTED ANNUAL FLOOD DAMAGE COMPUTATION (EAD) 44
Grand Summary of Undiscounted EAD 44
Footnotes To Frequency-Damage Table 44
Error With More Than Seven Plans 45
Calculation Status On the Personal Computer 45
Suppression of Output - Truncation Notes and Affluence 45
PP Record - Printout and Punch Options (Optional Record) 46
File Assignments 47
STRUCTURE INVENTORY FOR DAMAGE ANALYSIS (SID) 48
Observing the Maximum Limits For Floodproofing 48
Sampling Using the SL Record 48
Additional Results Written to the HECDSS Data File 49
Modification To J2 Record 49
Computing the Reference Flood Elevation 50
Calculation Progress On the Personal Computer 50
File Assignments 50
STRUCTURE INVENTORY FOR DAMAGE ANALYSIS EDIT PROGRAM (SIDEDT) 52
User Input Error Correction 52
Generation of Random Damage Function File 52
File Assignments 52
DATA STORAGE SYSTEM DISPLAY PROGRAM (DSPLAY) 55
Graphics Drivers 55
Modification of CONFIG.SYS File 55
File Assignments 56
HEC-2 POST-PROCESSOR FOR FLOOD DAMAGE COMPUTATIONS (FDA2PO) 57
Program Purpose 57
File Assignments 57
Reference Flood Calculation 58
Discharge-Elevation Function Calculation 59
Example Execution of FDA2PO 60

APPENDIX B: REQUIRED FILE ASSIGNMENTS TO TEST SAMPLE DATA SETS FROM USER'S MANUALS 66
BAT File To Execute Sample Data Files 66
DAMCAL Sample Data Files 67
Test 1 67
Test 2 67
Test 3 68
Test 4 68
EAD Sample Data Files 69
Test 1 69
Test 2 69
Test 3 69
Test 4 70

SID Sample Data Files 70
Test 1 70
Test 2 71
Test 3 71
Test 4 72
Test 5 72
Test 6B 73
Test 6A 73
SIDEDT Sample Data Files 74
Test 1 74
Test 2 74
Test 3 75
Test 4 75
Test 5 76
FDA2PO Sample Data Files 77
Test 1 77
Test 2 77
Test 3 78
Test 4 78

APPENDIX C: REQUIRED FILE ASSIGNMENTS TO TEST TRAINING DOCUMENT 21 SAMPLE DATA 79
BAT File To Execute T.D. 21 Sample Data 79
HEC-1 Test Data Files 80
Test 1 80
HEC-5 Test Data Files 80
Test 1 80
DSSUTL Test Data Files 81
Test 1 81
Test 2 81
Test 3 82
HEC-2 Test Data Files 83
Test 1 83
Test 2 83
FDA2PO Test Data Files 84
Test 1 84
Test 2 85
Test 3 85
SID Test Data Files 86
Test 1 86
Test 2 86
EAD Test Data Files 87
Test 1 87

APPENDIX D: DESCRIPTION OF SELECTED FILES 88

APPENDIX E: LIST OF FILES ON 3½ INCH DISKETTE 90

APPENDIX F: LIST OF FILES ON 5¼ INCH DISKETTE 98

List of Figures

Figure 1: Flood Damage Analysis Package 6
Figure 2: Banner Page of Installation Program 13
Figure 3: Defining the Boot and Installation Drive 14
Figure 4: List of Available Files 14
Figure 5: Define Subdirectory For GSS Device Drivers 15
Figure 6: Select Device Drivers 15
Figure 7: Defining the Device Driver For the Monitor 16
Figure 8: Select Sample Data Sets 16
Figure 9: Define Subdirectory For Sample Data 17
Figure 10: Modifying "CONFIG.SYS" File 17
Figure 11: Modifying the "AUTOEXEC.BAT" File 18
Figure 12: Initiate Installation Menu 19
Figure 13: Typical Request For Diskette 19
Figure 14: Final Installation Screen 20
Figure 15: MENUFDA Banner 27
Figure 16: Select Study Menu 27
Figure 17: Edit Study Menu 28
Figure 18: Select Computer Program 28
Figure 19: Define Data Files Menu 29
Figure 20: Data Directory List 30
Figure 21: DAMCAL Menu 31
Figure 22: EAD Menu 32
Figure 23: SID Menu 32
Figure 24: SIDEDT Menu 33
Figure 25: DSSUTL Menu 33
Figure 26: DSPLAY Menu 34
Figure 27: FDA2PO Menu 34
Figure 28: PIP Menu 35
Figure 29: HEC-1 Menu 35
Figure 30: HEC-2 Menu 36
Figure 31: HEC-5 Menu 36
Figure 32: DSS5T6 Menu 37

List of Tables

Table 1: Typical CONFIG.SYS File 18
Table 2: Grand Summary of Undiscounted EAD 44
Table 3: Frequency-Damage Truncation 45
Table 4: DAMCAL Test 1 Files 67
Table 5: DAMCAL Test 2 Files 67
Table 6: DAMCAL Test 3 Files 68
Table 7: DAMCAL Test 4 Files 68
Table 8: EAD Test 1 Files 69
Table 9: EAD Test 2 Files 69
Table 10: EAD Test 3 Files 69
Table 11: EAD Test 4 Files 70
Table 12: SID Test 1 Files 70
Table 13: SID Test 2 Files 71
Table 14: SID Test 3 Files 71
Table 15: SID Test 4 Files 72
Table 16: SID Test 5 Files 72
Table 17: SID Test 6A Files 73
Table 18: SID Test 6B Files 73
Table 19: SIDEDT Test 1 Files 74
Table 20: SIDEDT Test 2 Files 74
Table 21: SIDEDT Test 3 Files 75
Table 22: SIDEDT Test 4 Files 75
Table 23: SIDEDT Test 5 Files 76
Table 24: FDA2PO Test 1 Files 77
Table 25: FDA2PO Test 2 Files 77
Table 26: FDA2PO Test 3 Files 78
Table 27: FDA2PO Test 4 Files 78
Table 28: HEC-1 Test 1 Files 80
Table 29: HEC-5 Test 1 Files 80
Table 30: DSSUTL Test 1 Files 81
Table 31: DSSUTL Test 2 Files 81
Table 32: DSSUTL Test 3 Files 82
Table 33: HEC-2 Test 1 Files 83
Table 34: HEC-2 Test 2 Files 83
Table 35: FDA2PO Test 1 Files 84
Table 36: FDA2PO Test 2 Files 85
Table 37: FDA2PO Test 3 Files 85
Table 38: SID Test 1 Files 86
Table 39: SID Test 2 Files 86
Table 40: EAD Test 1 Files 87

INTRODUCTION

PC Package Content

This document describes the Flood Damage Analysis (FDA) Package as it is implemented for an IBM or MS-DOS compatible personal computer (PC). The Package contains several computer programs that are linked through a data base management system. Most programs are executed in a "batch" style (i.e. they read data from a fixed formatted input data file and write to an output data file). The FDA Package supplied does not contain all of the programs as documented in HEC's publication "Flood Damage Analysis Package," Training Document No. 21 (1). However, additional utility programs are included and the supplied programs facilitate storage and retrieval of all of the required parametric relationships. Specifically, this package includes the following analysis programs:

- Damage Reach Stage-Damage Calculation (DAMCAL)
- Expected Annual Flood Damage Computation (EAD)
- Interactive Paired-Function Input Program (PIP)
- Structure Inventory for Damage Analysis (SID)
- Structure Inventory for Damage Analysis Edit (SIDEDT)
- Data Storage System Utility (DSSUTL)
- Data Storage System Display (DSPLAY)
- HEC-2 Post Processor (FDA2PO)
- HECDSS file conversion utility (DSS5T6)

Other programs utilized in the FDA Package calculations include: HEC-1, HEC-2, and HEC-5. All three of these programs are operational on the PC and they each have their own menu program and associated utilities. As of September 1990, the standard distribution copy of HEC-5 and the "Beta" test version of HEC-1 are capable of accessing HECDSS data files. FDA2PO, the HEC-2 post-processor program, is compatible with the previous as well as the current release of the HEC-2 Package. It facilitates writing results to HECDSS data files. As a substitute to using the HEC-1 and HEC-5 modeling programs directly, the user may run the PIP program to store frequency curves computed by HEC-1 and HEC-5, and run the FDA2PO program to store discharge-elevation functions computed by HEC-2. The FDA2PO program requires that HEC-2 either be run on the PC and the results saved from the "TAPE95" file or that the "TAPE96" file from the mainframe/minicomputer be saved and loaded on the PC.

In addition to the above analysis programs, several utility programs are included. A menu program (FDAMNU) is supplied. This menu program facilitates convenient study selection, program execution, and data file selection and modification. To edit and create input data files, the menu program invokes the text editor "COED" in full screen mode. It also invokes the "Help Program" mode for the DAMCAL, EAD, SID, and SIDEDT programs, and the utilities "LIST" to display output results to the monitor and "PROUT" to print output to a printer.

The FDA Package uses several software packages which have been obtained from commercial vendors. The HECDSS-DSPLAY program utilizes device driver software to generate plots on monitors, printers, and/or pen plotters. Graphic Software Systems, Inc. (2) has written and distributes these device drivers. The analysis programs EAD, SID, and DAMCAL utilize the Spindrift Library (3) of software to generate computation status messages without scrolling. Finally, the utility programs "PKUNZIP" (4) and "PKZIP" are supplied. The computer programs are stored on diskette in a compressed format. They are unusable in this format and must be decompressed into a usable form. The "PKUNZIP" utility program performs this process. An installation program is also supplied that performs this task automatically for the user. This document describes the installation process and provides documentation for using the FDA package on the PC.

Overview of Modifications Since the July 1988 Release

Introduction

Since the first release of the FDA Package for the MS-DOS personal computer, there have been several modifications and additions to the Package. These are summarized below.

HECDSS

The HECDSS software has been upgraded to version 6. This has a major ramification for user's of the current July 1988 version of the Package. Any HECDSS data file created with the earlier software (version 5) is not compatible with the software distributed with the September 1990 Package (version 6). To use older files with the new software, you must convert them from a version 5 to a version 6 formatted file. You do this using the program **DSS5T6** which creates a copy of the existing file in a new file formatted for version 6 of the HECDSS software. To make this conversion, you must have enought disk space to store a second copy of your HECDSS data file.

DAMCAL

The DAMCAL program has been added to the MS-DOS FDA Package. It is linked to the HECDSS software. The **DAMCAL** user's manual is out-of-date and does not accurately reflect the current sample data set input and output. New sample input and output are included on the distribution diskettes.

MENUFDA

The **MENUFDA program** includes several changes. These include the following:

- The list of programs not only includes the addition of DAMCAL and DSS5T6, but also HEC-1, HEC-2, and HEC-5. This menu is not designed to be the primary menu system for these last three programs --- each has their own extensive menu and utilities Package. By adding them to the FDA Package menu, the user may obtain existing data sets, rename the input data file so that the file extension is consistent with the FDA Package data file extension standards, define output files using the MENUFDA so

that appropriate extensions are defined, and finally execute the appropriate model to save results which are required for computing expected annual damage.

- The FDA Package menu also has stricter control on the user entries for file and directory names. The July 1988 version of the Package allowed the user to destroy the default file extensions if more than 8 characters were entered. The new release prevents this from happening unless the "default extension" mode is turned off.

- The new MENUFDA also uses the MS-DOS "PRINT" command to print all input, output, and data files except for the output from HEC-1, HEC-2, and HEC-5. For these files, the utility program "PROUT" is invoked. The old version of MENUFDA invoked "PROUT" for all printout and truncated the first column of all printed files.

- The "F5" function key replaces the "?" key in the "Define Data Files" menu. This change allows the user to enter the "?" key as the first character in a DOS file mask. For example, if your SID input data files include the file "12SF.I" and you can remember the code "SF" but not the numeric part, you may now list all files which have "SF" as the third and fourth characters by entering the file specification "??SF.I". In the original release of MENUFDA, this was not possible.

- The MENUFDA program utilizes several additional function keys. They have been implemented to act as an alternative to using the "Alt-#" key combination where the "#" character is some letter such as "e" for edit the file with COED. Function keys have been implemented as follows:

Alt-# combination	Equivalent Function Key	Operation Description
Alt-d	F3	Delete the highlighted file.
Alt-e	F4	Edit the highlighted file with COED.
Alt-l	F6	List the highlighted file.
Alt-x	F8	Execute the selected program.

- Whenever you edit a file using COED, the MENUFDA program verifies that a proper "help program" file exists and that it is included in the cross-reference list of computer programs and their associated "help program" filename. It does this by reading the file "C:\HECEXE\SUP\COED.HPG". For example, if you ask to edit an EAD input data file, MENUFDA searches "C:\HECEXE\SUP\COED.HPG" to find the program EAD. If it

finds a match to the selected program, it continues. If it does not find a match, it searches for the existence of an appropriate "help program" file (e.g. "C:\HECEXE\SUP\COEDEAD.HPG"). If it finds this file, it modifies the "...COED.HPG" file so that it contains the correct reference.

EAD

The **EAD** Computer Program User's Manual was updated in March 1989. Since this update, several changes have been made to the program including:

- The **EAD** output includes a grand summary table of undiscounted expected annual damage when equivalent annual damage is calculated.
- Frequency-damage tables include a footnote character when interpolated results are truncated because discharge-elevation functions and/or elevation-aggregated damage matrices do not cover the desired range of exceedance frequency.
- An error in the expected annual damage summary tables has been corrected. It sometimes occurred if more than seven plans were analyzed and only in one plan.
- The scrolling status output has been replaced by a fixed screen display of the computation status. It displays a more detailed status of calculations and utilizes the Spindrift Library (3) of subroutines.
- The user may suppress the output from the affluence calculations as well as the output of interpolation truncation footnotes.

SID

The **SID** Computer Program User's Manual was updated in March 1989. Since this update, several changes have been made to the program.

- If the user specifies a maximum floodproofing limit and that limit would be exceeded, SID will print a message and reduce the floodproofing limit to the specified maximum. This change is documented in the sample data sets of the SID manual.
- If one set of SL and SD records represents more than one structure, the number of structures may be entered in columns 76-80 of the SL record. This value is then used in the flood zone summary tables.
- SID writes additional information to the HECDSS file including flood zone summary information for aggregated damage, value of structures, and number of structures. Flood zone summaries include tables for structure value based on zero damage elevations.
- The scrolling status printout has been replaced by a fixed screen display of the computation status. It displays a more detailed status of calculations and utilizes the Spindrift Library (3) of subroutines.

SIDEDT The **SIDEDT** program includes the new input variables used by the SID program.

PIP The **PIP** program remains essentially unchanged.

FDA2PO The **FDA2PO** program includes the "PREAD" capability (see documentation on "WATER CONTROL SOFTWARE, Implementation and Management). The user may store program input in macros for often repeated input data.

DSPLAY

The **DSPLAY** program is revised. It requires new device drivers as supplied on the diskettes. You cannot use the new program with the old device drivers from GSS.

Purpose of Each Program

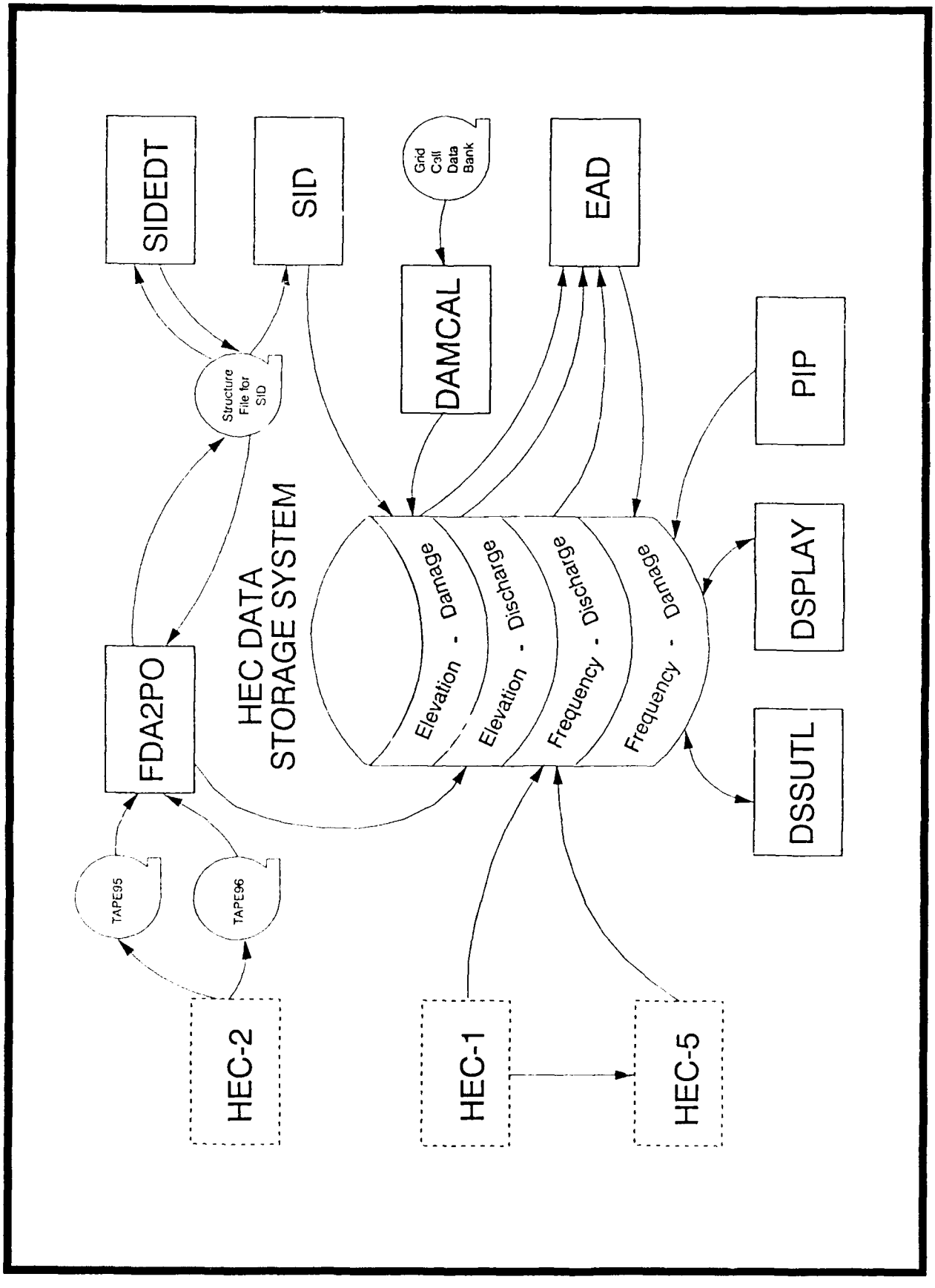
The HEC Flood Damage Analysis Package is schematically illustrated in Figure 1. The package is comprised of the following computer programs:

Flood Damage Analysis Computer Programs

Five programs are used to compute flood damage. All five are included in the distribution of the FDA Package. If flood damage computations are based on conventional structure inventories, then a structure file is constructed based on a field inventory of structures vulnerable to flood damage and the **SID** program is used. If damage computations are spatially based, then a grid cell data bank is constructed and the **DAMCAL** program is used. It is possible that both damage approaches may be used for a given study, in which case both files will exist. The flood damage analysis programs include:

- **SID, Structure Inventory For Damage Analysis** (5); processes inventories of structures located in the flood plain; used to develop elevation-damage relationships.
- **SIDEDT, Structure Inventory For Damage Analysis Edit Program** (6); edits structure inventory and damage function files used for the SID program.
- **DAMCAL, Damage Reach Stage-Damage Calculation** (7); performs a similar analysis as SID based on a geographic (spatial) unit; used to develop elevation-damage relationships.
- **EAD, Expected Annual Damage Computation** (8); computes expected (or equivalent) annual damage and inundation reduction benefits; used to compare flood damage mitigation plans.
- **FDA2PO, HEC-2 post-processor program**; computes the reference flood elevation at structures and stores discharge-elevation rating curves in a HECDSS data file.

Figure 1: Flood Damage Analysis Package



Hydrologic Analysis Computer Programs

The FDA Package also utilizes the following Hydrologic Analysis Computer Programs. They are maintained separate from the FDA Package. From the standpoint of flood damage analysis, they are used to model the rainfall-runoff processes and basin modeling for multiple plans. These programs include:

- **HEC-1 Flood Hydrograph Package** (9); simulates rainfall-runoff, simple reservoirs, and hydrologic channel routing. It is used to develop existing and future without and with project conditions flow-frequency functions.

- **HEC-2 Water Surface Profiles** (10); computes steady-state, uniform flow water surface profiles. It is used to develop existing and future without and with project conditions discharge-elevation functions.

- **HEC-5 Simulation of Flood Control and Conservation Systems** (11); simulates complex reservoir systems. It is used to develop existing and future without and with project conditions flow-frequency functions.

HEC-DSS (Data Management) Utility Programs

The FDA Package also utilizes the following HECDSS Utility Programs. They are included on the FDA Package distribution diskettes. They facilitate adhoc data entry of flood damage related matrices, HECDSS data file management, and output displays of data stored in HECDSS data files. These programs include:

- **PIP, Interactive Paired-Function Input Program** (12); allows the user to directly enter paired-function relationships to a DSS data file, for example, an elevation-damage relationship derived by hand from field data.

- **DSSUTL, HEC-DSS Utility Program** (13); provides the means of performing utility functions on data stored in the HEC-DSS data file, for example, cataloging, editing, and deleting data.

- **DSPLAY, HEC-DSS Display Program** (13); provides the means to tabulate and plot data stored in a HEC-DSS data file.

- **DSS5T6, HEC-DSS File Conversion Program**; facilitates converting HECDSS files from version 5 to version 6 format for the HECDSS software.

Program Support

Several user's manuals and a training document describe most of the programs utilized in the Flood Damage Analysis (FDA) Package. The "Supplemental Computer Program Instructions" appended to this document provide additional information for those programs which have outdated or non-existent user's manuals. The HEC-2 post-processor FDA2PO has no user's manual but is documented in an appendix of this manual. HEC has modified the programs SIDEDT and DAMCAL since the last user's manuals have been released. These modifications are briefly described in an appendix. Other publications describe procedures and give application examples. Technical Papers give more generalized information on flood damage analysis (14,15,16) and floodplain management (17,18,19). Training documents give more detailed information and examples on flood damage analysis (1,20), floodplain management (21), and geographic information system methods (22,23,24).

The references on page 38 list approp : computer manuals which describe individual computer programs or provide supplemental information related to the FDA Package. The manuals as well as other related publications may be ordered from HEC or from private vendors. A Publication Catalog contains a listing of all available publications as well as ordering information and prices. HEC also maintains a list of vendors who sell the Package and provide support. The list may be obtained by contacting:

Hydrologic Engineering Center
Water Resources Support Center
609 Second Street
Davis, California 95616-4687
(916) 756-1104

QUICK START PROCEDURE

If you are an experienced personal computer user and have prior knowledge of the FDA Package, these summary instructions will get you started quickly with minimal reading. These instructions assume that your floppy diskette drive is drive "a:" although it could be any other valid drive (such as "b:").

- Check to make sure your computer meets the equipment requirements stated on page 11.
- Insert the diskette labeled "Install FDA" into drive A: (your 3½ or 5¼ inch diskette drive).
- Type "A:INSTALL".
- Respond to the questions that the INSTALL program asks and insert new diskettes as prompted. The Install program performs the operations listed below:
    - Creates (if necessary) the subdirectories C:\HECEXE and C:\HECEXE\SUP.
    - Decompresses and copies all executable code and ".bat" files into the C:\HECEXE subdirectory.
    - Decompresses and copies all supplemental files into the C:\HECEXE\SUP subdirectory. This includes on-line help for COED and menu screens for PIP.
    - Decompresses and copies all requested sample data sets into the user-specified subdirectories and modifies the file C:\HECEXE\SUP\FDAMENU.SDY to reflect the addition of these sample data sets. This file maintains a list of study names and their associated subdirectories.
    - Decompresses and copies requested graphics device drivers into the subdirectory C:\GSS.
    - If required, it modifies the files C:\CONFIG.SYS and C:\AUTOEXEC.BAT to: (1) reflect the addition of device drivers for graphics, (2) insure that there are enough files and buffers, and (3) verify or add a reference the C:\HECEXE subdirectory. These files must exist in the root directory of your boot fixed disk drive (typically, subdirectory "c:\"). For each file that must be changed, the install program always backs up your current version of this file by setting the extension to "@@@" and inserting an integer code into positions 7 and 8 of the filename. For example, the config.sys file may be backed up in the file "CONFIG03.@@@". If you do **not** want your system files modified, the Install program prompts

you for another filename and writes those modifications to that file. That user-defined file is also in the root directory of the boot drive ("c:\"). For everything to work correctly, you will have to copy that file into the appropriate system file (CONFIG.SYS or AUTOEXEC.BAT) and then re-boot your computer.

- When all programs and data are copied to your fixed disk, the Install program gives you a list of modifications, a list of subdirectories into which the programs are stored, and a message to re-boot your computer if it is required. The FDA Install program then terminates.

- To begin using the FDA Package, initiate the FDA Package Menu program by typing "MENUFDA".

- Define your study (or use the example data sets), select the desired program, define the data files for that program, and execute the program. Use the "list" option from the MENUFDA program to view the computed results.

Computer Equipment Requirements

The September 1990 version of the Flood Damage Analysis Package requires a hard (or fixed) disk. If you don't have a fixed disk, you may be able to transfer the compressed executable from the installation diskettes to some other medium. Consult the section "Installing Analysis Programs" for more information. The FDA Package requires the following minimum system configuration:

- 640 Kilobytes (KB) of Random Access Memory (RAM).
- MS DOS 3.1 or greater.
- One 3½ or 5¼ inch floppy diskette drive capable of reading 360Kb diskettes.
- A fixed (hard) disk. The FDA Package requires 3.0Mb storage for programs and 2.5MB for all of the sample data. Large studies may require 30 to 200 megabytes of storage for input and condensed output data.
- A math coprocessor is highly recommended but not required.
- Either a 80286, 80386, or 80486 processor is highly recommended but not required.
- Either a Video Graphics Adapter (VGA) or an Enhanced Color Graphics Adapter (EGA) is highly recommended but not required. A graphics adapter is required for graphical displays using the HECDSS-DSPLAY computer program.

Hard Disk Organization

The FDA Package Installation Program facilitates installation on a hard disk. It requires that all program executable files exist in the subdirectory "\HECEXE" and that supplemental files (such as program help or menu files) exist in the subdirectory "\HECEXE\SUP". The user should create separate subdirectories for each study that is performed. For example, the sample data contains two data sets. Each should be stored in a separate subdirectory. For example:

Study	Data subdirectory
Sample Data	\DATA\FDA\TESTDATA
Silver Creek	\DATA\FDA\TD21DATA

For the Silver Creek Study, the subdirectory "\DATA\FDA\TD21DATA" would contain all data associated with this study. This includes EAD, PIP, SID, SIDEDT, and HEC-2 input data and output results. Because of the nature of the menu program, **you must store all data associated with a given study in one subdirectory. Also, each subdirectory should contain data for only one study.**

INSTALLING THE PC VERSION OF FDA

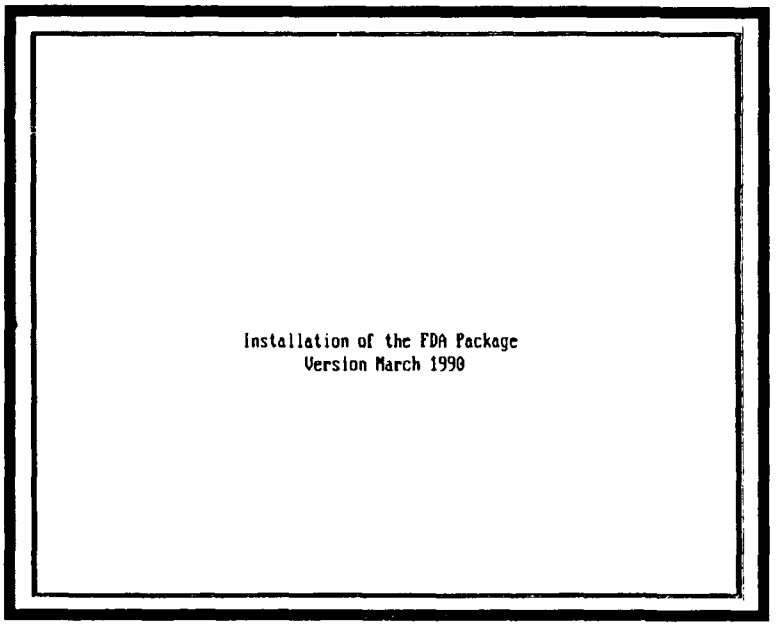
The Flood Damage Analysis Package is installed on the fixed (hard) disk by executing the FDA Install program. The program installs the editor COED, the analysis programs DAMCAL, EAD, PIP, SID, SIDEDT, DSSUTL, DSPLAY, FDA2PO, sample data files, and the GSS device drivers. The sections below describe each step of the installation procedure.

The Installation Program

The FDA Package installation program is stored on the diskette labeled "Install FDA". The instructions below assume your fixed disk drive is "c:" and your floppy diskette drive is "a:". If your drives are different, substitute the appropriate drive identifier. To begin installation of the FDA Package, perform the following steps:

- Insert the diskette labeled "Install FDA" into the "a:" drive.
- Type "a:INSTALL" and press the <Enter> key.

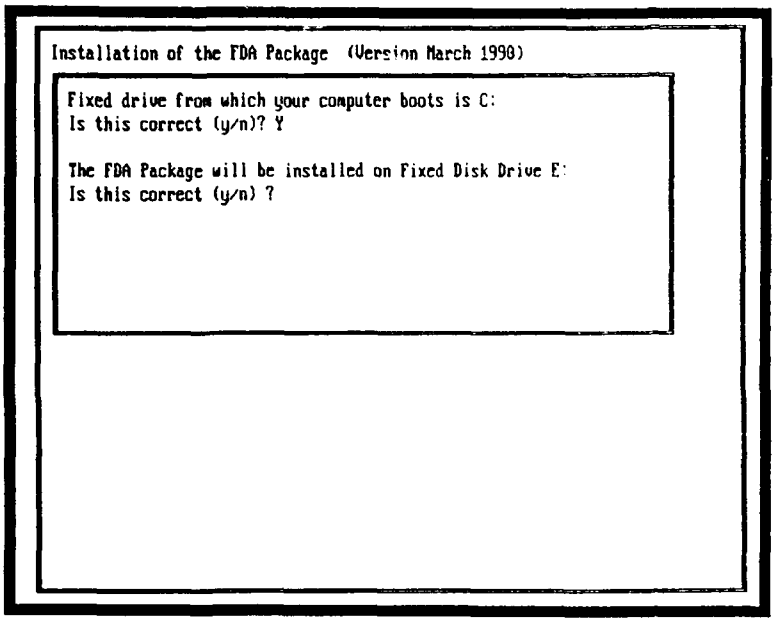
Figure 2: Banner Page of Installation Program



Banner Page

The FDA Install program will flash a banner page as shown in Figure 2. It will vanish in about 10 seconds. Alternatively, you may press any key to proceed to the next screen.

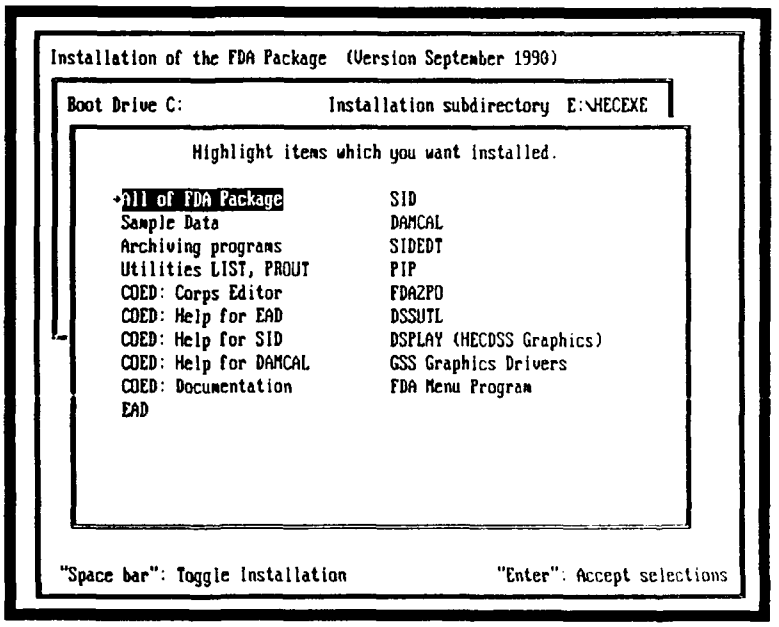
Figure 3: Defining the Boot and Installation Drive



Fixed Disk Drive Identification

The FDA Install Program will then prompt the user to identify the boot drive. It assumes the boot drive is "C" but the user may define it otherwise. The user must verify the selection after which the FDA Install program prompts the user to identify the drive on which the software will be installed. The default is assumed to be the "C" drive. Figure 3 depicts the installation screen for this procedure.

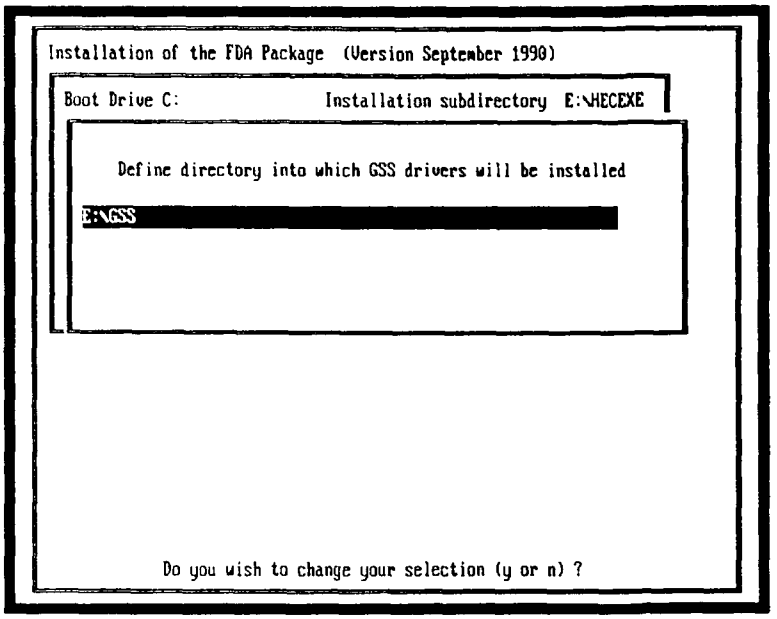
Figure 4: List of Available Files



Available File Groups

The FDA Install Program then lists the programs and supplemental files supplied on diskette for the FDA Package and requests that the user select those that will be installed. By default, all programs and associated data files will be installed. FDA Install will prompt the user to define which sample data sets will be installed as shown in Figure 4. The user selects a file set by moving the highlighted cursor to the desired data set and pressing the <space bar>. File sets are installed if they are highlighted. For example, in Figure 4, the selected option is "All of the FDA Package". After selecting all of the desired file sets, the user must press the <Enter> key. FDA Install asks the user to verify the selection(s). If changes are required, the user presses the "n" key for no and may now make additional selections. Otherwise, the "y" key is pressed and FDA Install proceeds to the next menu.

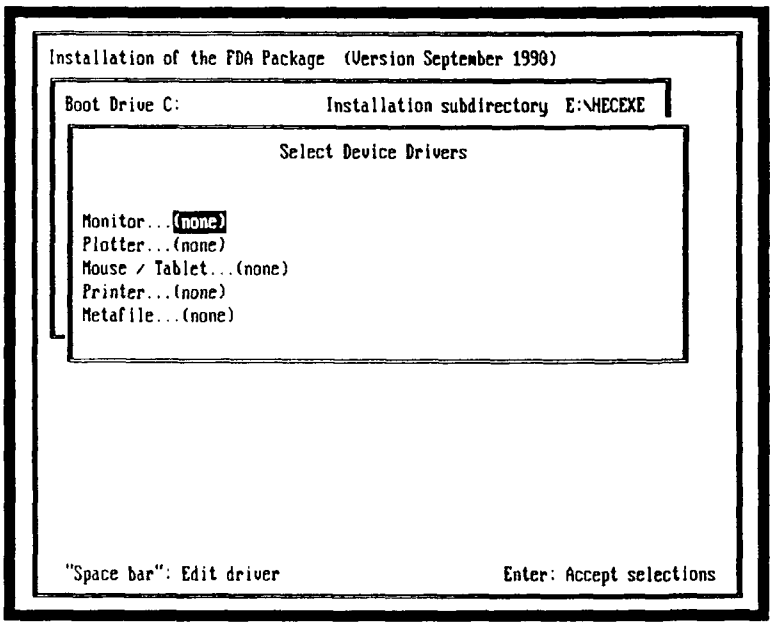
Figure 5: Define Subdirectory For GSS Device Drivers



Subdirectory For GSS Device Drivers

If the user wishes to install DSPLAY or the GSS device drivers, FDA Install asks the user to define the subdirectory into which the device drivers are copied. **The device drivers are required only if you wish to plot data using HECDSS-DSPLAY.** In the original FDA Package, the device drivers were installed in the "C:\HECEXE\SUP" subdirectory. In this version, the default location is the subdirectory "C:\GSS". If you already have device drivers on your fixed disk drive, FDA Install will decompress the new drivers from the floppy installation diskette into the specified subdirectory. It will **not** delete existing GSS device drivers. The new version of DSPLAY requires the new version of device drivers --- After installing the new version, you should delete the old drivers from your fixed disk. Figure 5 depicts the menu when the user is selecting the desired files.

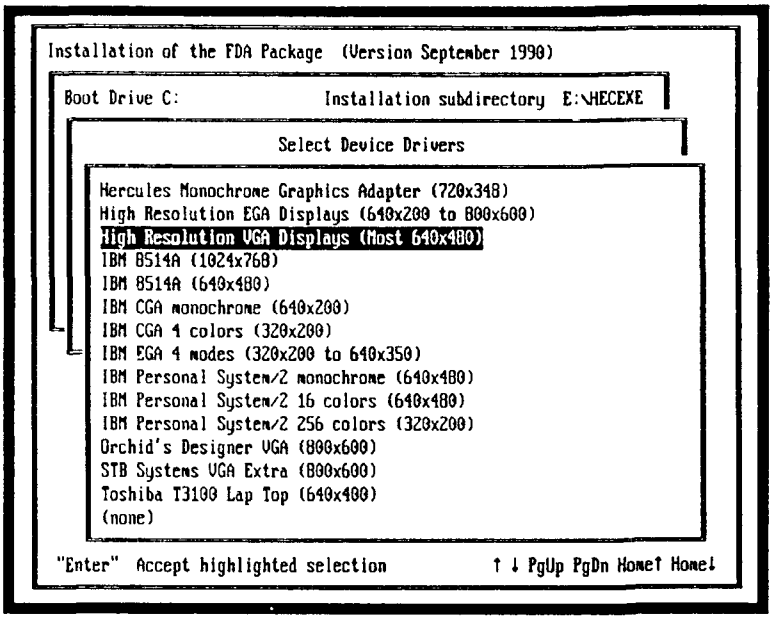
Figure 6: Select Device Drivers



Types of Device Drivers

Once the GSS device subdirectory is defined, the user must define the available graphic devices and/or the pointing device. There are five device types: (1) Monitor, (2) Pen Plotter, (3) Mouse or Tablet input pointer, (4) Printer, and (5) Metafile (graphics are written to a file on disk for later use by other programs). The list of device types are shown in Figure 6.

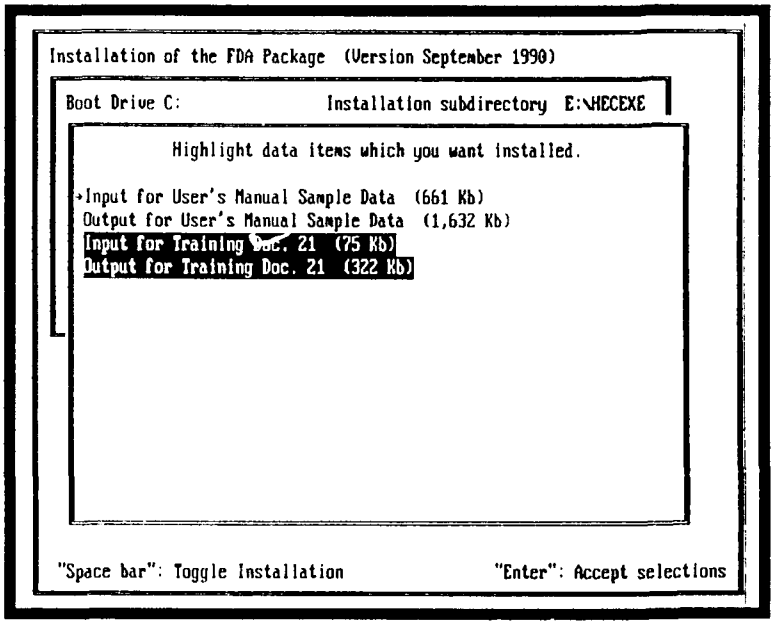
Figure 7: Defining the Device Driver For the Monitor



List of Monitors

You may define the device drivers for one or more types. For example, you may define drivers for your monitor only, your monitor and your mouse, or your monitor, mouse, and plotter. To define the device drivers, position the cursor to the desired device type as shown in Figure 6 and press the <space bar>. In this example, the monitor is highlighted (the device driver is set to "none" to indicate that no driver has been defined). The user presses the <space bar> and a new menu appears as shown in Figure 7. Using the cursor, PgUp, and PgDn keys, the user highlights the device driver for the monitor's graphics board. This example shows selecting the device driver for the IBM Personal System/2 or compatible graphics card which displays 16 colors on a resolution of 640 by 480 pixels (standard VGA graphics). When the appropriate device driver is highlighted, press the <Enter> key to select that driver and return to the previous menu.

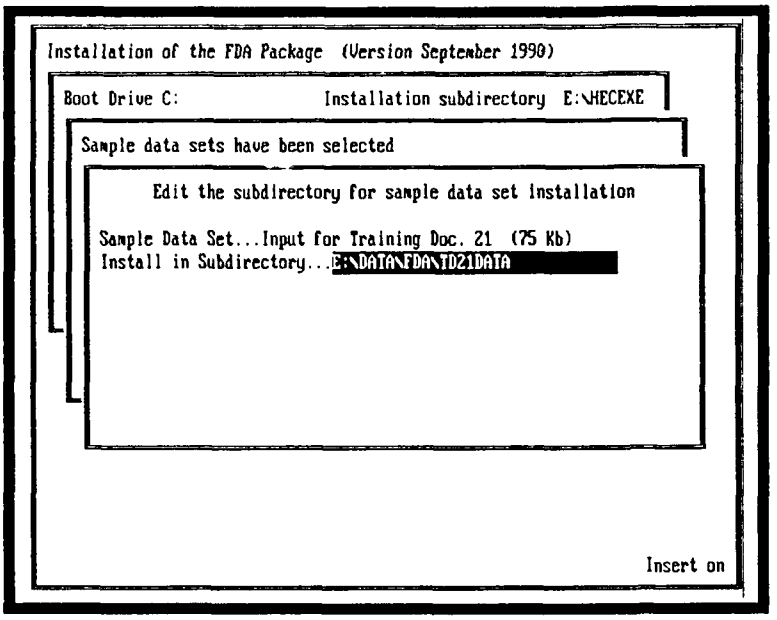
Figure 8: Select Sample Data Sets



Sample Data Sets

After installing all of the necessary device drivers, you must next select the sample data sets which will be copied to your hard disk. There are two sets: (1) Sample Data set which correspond to those used in each computer program user's manual, and (2) Silver Creek data set which corresponds to the example described in the "Flood Damage Analysis Package User's Manual" (1). For each data set, you have the option of copying the input and/or the output to your fixed disk drive. Since the output data sets require significant disk storage space, you may wish to only retrieve the input data. To make your selections, move the cursor and press the <space bar> to select or deselect the data sets as shown in Figure 8. After selecting / deselecting data sets, press the <Enter> key to proceed to the next menu.

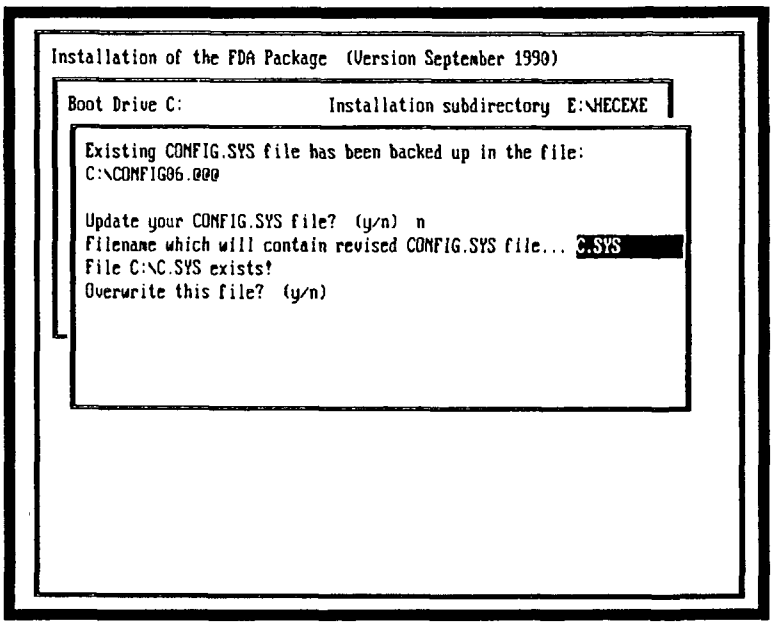
Figure 9: Define Subdirectory For Sample Data



Subdirectory For Sample Data

The FDA Install program prompts you to define the disk drive and subdirectory location into which the sample data sets are copied as shown in Figure 9. It will prompt you separately for input and output locations. For all studies, you would store input and output in the same subdirectory. The FDA Install program allows you to store output in a separate subdirectory so that should you want to compare results, you could execute any of the programs and not over-write the answers as supplied on the distribution diskettes.

Figure 10: Modifying "CONFIG.SYS" File



Modifying the CONFIG.SYS File

At this point, you have defined all of the drives (boot and Package software installation), all of the subdirectories (GSS device driver and sample data sets), and all of the device drivers. To make everything work, two files ("CONFIG.SYS" and "AUTOEXEC.BAT") in the root directory of your boot drive must be modified. If you have previously installed some of HEC's software, you may not have to modify these files. FDA Install will first modify your "CONFIG.SYS" file. It must contain required references to device drivers (if requested) and the proper number of files and buffers. You are lead through a series of questions as shown in Figure 10. FDA Install automatically saves a copy of your existing "CONFIG.SYS" file by creating a file "CONFIG##.@@@" where character positions 7 and 8 contain a number which is incremented every time a backup is made. In this example, the file "CONFIG01.@@@" already existed so it created the file "CONFIG02.@@@". FDA Install then asks you if you wish to modify the file "CONFIG.SYS". If you don't, FDA Install will prompt you for a file into which the modified "CONFIG.SYS" file instructions are written. Normally, you would automatically modify your "CONFIG.SYS" file. In the example shown in Figure 10, the "CONFIG.SYS" file was not modified and the instructions were written to the existing file "C:\C.SYS". The FDA Install program adds one line to the "CONFIG.SYS" file for every device

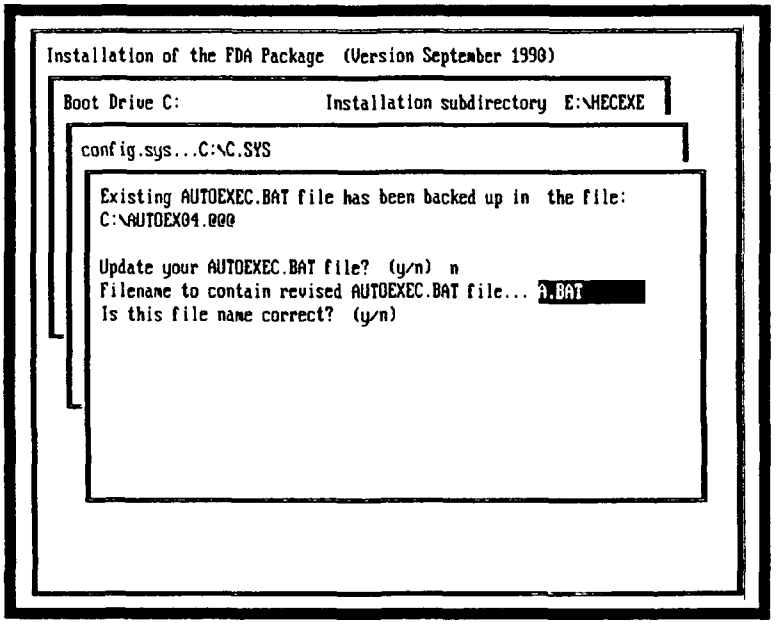
driver requested. In addition, the GSS graphics controller software must be entered as the last device driver in a specific format as shown in Table 1.

Table 1: Typical CONFIG.SYS File

```
shell=c:\command.com /p /e:356
buffers = 20
files = 20
device = c:\dos\ansi.sys
device = c:\gss\ibmvga12.sys
device = c:\gss\hpplot.sys
device = c:\gss\msmouse.sys /g:mice
device = c:\gss\gsscgi.sys /t
```

If the "CONFIG.SYS" file is modified, your computer must be re-booted to invoke the changes. For this example, it is assumed that the user has a VGA graphics card, a Hewlett Packard Plotter, and a Microsoft Mouse. The device driver "GSSGCI.SYS" **must be the last** device driver in the "CONFIG.SYS" file. If you have memory above 640Kb, you may decrease the number of buffers and add "caching". The FDA Install program does not check for it, but your "CONFIG.SYS" file must contain the device driver "ANSI.SYS" as shown in Table 1.

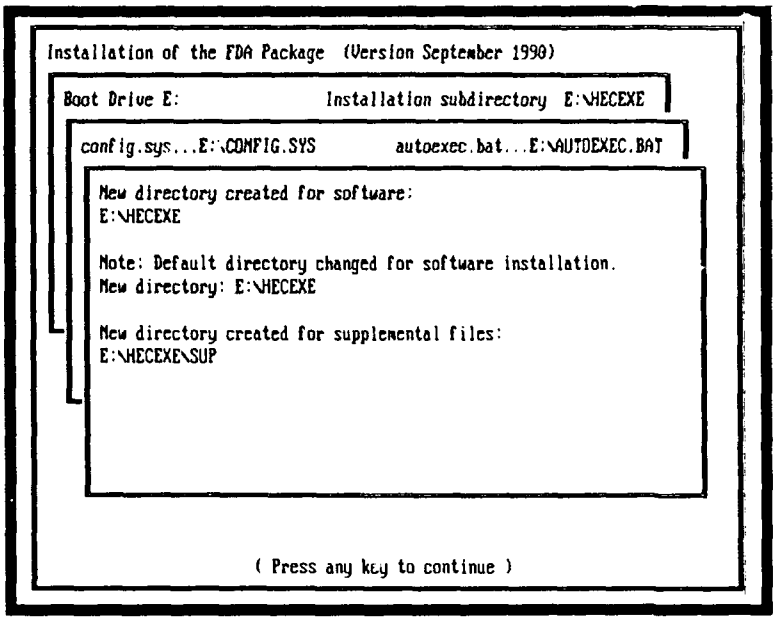
Figure 11: Modifying the "AUTOEXEC.BAT" File



Modifying the AUTOEXEC.BAT File

The "AUTOEXEC.BAT" file must be modified in a manner similar to the "CONFIG.SYS" file as shown in Figure 11. FDA Install modifies the "PATH" command so that it contains a reference to the subdirectory "C:\HECEXE" (assuming the fixed disk drive onto which the software is installed is drive "C"). All of the executable code for each program as well as any ".bat" files are written to this subdirectory. The "PATH" command should also contain references to the root directory of your boot drive (e.g. "C:\" as well as the subdirectory which contains your DOS software (e.g. "C:\DOS").

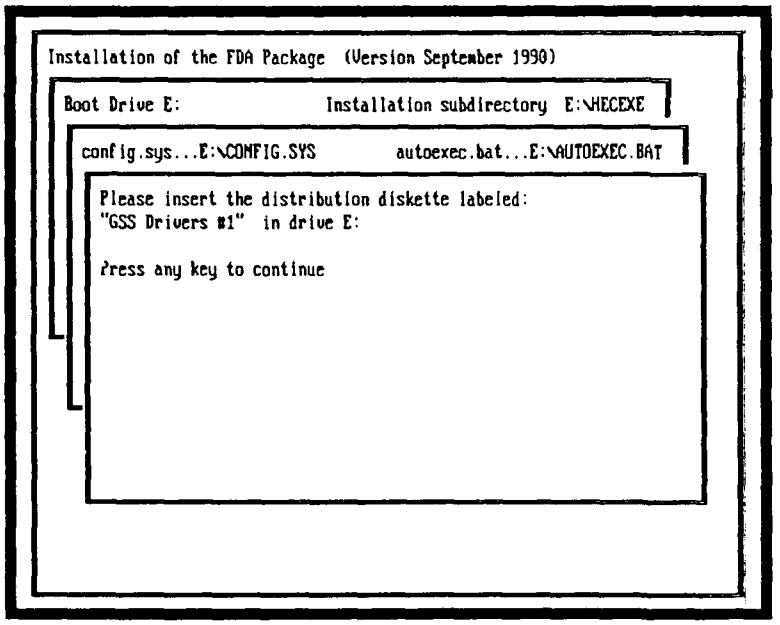
Figure 12: Initiate Installation Menu



Initiate Installation

At this point, FDA Install has all of the information it requires to begin installation. It issues an informative screen as shown in Figure 12. FDA Install creates the directory "C:\HECEXE" and "C:\HECEXE\SUP", and moves into the subdirectory "C:\HECEXE" from which it installs all of the software and sample data sets.

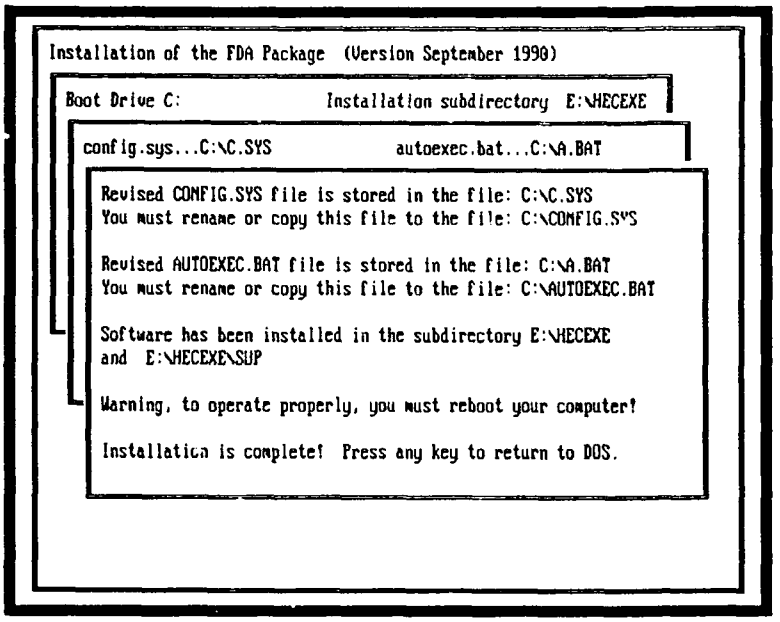
Figure 13: Typical Request For Diskette



Request For Diskette

From this point on, FDA Install prompts you for each of the required diskettes. Figure 13 is a typical screen requesting you to insert one of the installation diskettes. In this case, the Package is being installed using the diskette drive "E:". FDA Install checks each diskette for the proper volume label. If it doesn't match what it expects, it issues an error message and asks you to insert the correct diskette. You may bypass this check by entering the character "b".

Figure 14: Final Installation Screen



Installation Termination and Summary

After all of the software and sample data sets are installed, the FDA Install MENUFDA terminates with a screen similar to that shown in Figure 14. If your "CONFIG.SYS" or "AUTOEXEC.BAT" files were modified, FDA Install will allow you to re-boot your system. Otherwise, it terminates without re-booting your system.

Installing Device Drivers For Graphics

As a part of the installation procedure, FDA Install installs the device drivers for your particular set of hardware. These device drivers are required **only** if you wish to produce plots using the HECDSS-DSPLAY program on your monitor, printer, and/or pen plotter. The device drivers used are proprietary software of:

Graphic Software Systems, Inc.
9590 SW Gemini Drive
P.O. Box 490
Beaverton, Oregon 97005
Telephone: (503) 641-2200

The Hydrologic Engineering Center has signed a redistribution license with Graphic Software Systems, Inc. (or GSS, Inc.). The redistribution license allows HEC to redistribute the device drivers only to U.S. Army Corps of Engineers Offices. The license also requires that the recipient (in this case the user of the FDA Package) load the device drivers on only one personal computer. Therefore, if you wish to install the FDA Package on more than one computer, you must contact GSS, Inc. or HEC to obtain additional copies of the device drivers.

MenuFDA stores the device drivers in a subdirectory on the fixed disk and modifies the "CONFIG.SYS" file, which is located in the root directory of the fixed disk drive from which your PC boots. It is recommended that the user store the device drivers in the subdirectory "\GSS" although you may use some other suitable subdirectory such as "\HECEXE\SUP". If MENUFDA fails to install the device drivers, you may perform the steps outlined in the appendix to this manual.

USE OF MENUFDA

Running MENUFDA

To use the FDA Package on a hard disk system, a menu program may be used to assist the user in applying the different programs. To begin the menu program, enter:

MENUFDA

This should load the program and begin by displaying a banner page as described below. If the banner page does not appear, then the most likely cause of failure is that either one of the following files is missing:

[drive:]\HECEXE\MENUFDA.BAT or
[drive:]\HECEXE\FDAMNU.EXE

General Menu Program Description

The menu program consists of a banner page, three primary menus and two subordinate menus. The structure of the menus can be illustrated in outline format as shown below:

- Banner page.
- Select Study.
  - Enter or edit study name and associated data subdirectory.
- Select Program.
- *Define Data Files.*
  - List files in current directory with mask.

To successfully execute a program, the user must progress through the primary menus. The subordinate menus are used only if the user wishes and are not required for an individual execution.

Function and Cursor Control Keys

Several keys are used to control menu selection, item selection within a menu, and operation selection (edit or list a file and execute a program). The following list summarizes the primary MENUFDA **action keys**.

Key(s)	Description
F2	Reset selection or definition. Example: in the "Define data files" menu, the F2 key resets all file names to those initially selected when this menu was last invoked.
F3	Delete the highlighted files.
F4	Edit the selected disk file with COED. Pressing the F4 function key initiates editing the currently selected disk file with COED. This is operational only from the "Define data files" menu. The MENUFDA program invokes COED in a full screen mode with "Help Program" files, if applicable. You may obtain on-line documentation for COED by pressing the F1 function key while in COED and by following subsequent instructions. A complete COED user's manual is stored in the file "COEDDOC.ZIP" on the COED diskette. It may be extracted from the compressed file and may be copied to a printer. Alternatively, a pre-printed manual is available from HEC.
F5	Define the background screen color. The color is changed by repeatedly pressing the F5 key only in the "Select Study" and "Select Program" menus. You may select one of eight colors: black, blue, green, light blue, red, violet, orange, and white.
F6	Define the foreground screen color. The color is changed by repeatedly pressing the F6 key only in the "Select Study" and "Select Program" menus. You may select one of eight colors: black, blue, green, light blue, red, violet, orange, and white. The foreground color may be either normal or intense. To cycle through all possible definitions, you must press the F6 key sixteen times. Portions of the menu are displayed in reverse video. If you select an intense foreground color, sometimes you will get unexpected results. One example is using black as a foreground color. One combination that works well is a blue background and an intense white foreground.
F8	Execute the selected program. Pressing the F8 key initiates execution of the currently selected program (all necessary data files must have been defined). This is operational from the "Select Program" and "Define Data Files" menus.
F9	Return to previous menu. The F9 key allows you to exit the current selected menu and return to the previous menu. For example, if you are in the "Define data files" menu, you can go to the "Select Study" menu by pressing the F9 key twice - the first time you will access the "Select Program" menu and the second time the "Select Study" menu.

Key(s)	Description
F10	Exit to DOS. By pressing the F10 key from any menu, you will immediately terminate the MENUFDA program and return to the DOS environment.
Esc	Reset the current selection or return to the previous menu. Pressing the Esc key resets the current file, study name, data directory, etc. to that previously defined. The Esc key changes only the current selection (e.g. the currently selected file) whereas the F2 key changes all selections (e.g. all defined data files) or resets the current menu selection. The Esc key returns to the previous menu if the user is not editing a file name.
Home	Select the first option, file, study, etc. The Home key controls the item selection on the current menu and page. For example, on the "Select Study" menu, pressing the Home key selects the first study displayed on the current page of studies (the study in the upper left corner of the menu).
End	Select the last option, file, study, etc. The End key controls the item selection on the current menu and page. For example, on the "Select Study" menu, pressing the End key selects the last study displayed on the current page of studies (the study in the lower right corner of the menu).
Home,←	Move cursor to first character. Pressing the Home key, releasing it, and then pressing the left arrow key moves the cursor to the first character in a field. This is operational when you are editing study names, filenames, and directory names.
Home,→	Move cursor to last character. Pressing the Home key, releasing it, and then pressing the right arrow key moves the cursor to the last character in a field. This is operational when you are editing study names, filenames, and directory names.
←	Move cursor one character to the left. Pressing the left arrow key moves the cursor one character to the left. It is operational when you are editing study names, filenames, and directory names.
→	Move cursor one character to the right. Pressing the right arrow key moves the cursor one character to the right. It is operational when you are editing study names, filenames, and directory names.
↑	Select previous study, file, or option. Pressing the up arrow changes the current selection to the one displayed just above the current selection. It is operational in all menus.

Key(s)	Description
↓	Select next study, file, or option. Pressing the down arrow changes the current selection to the one displayed just below the current selection. It is operational in all menus.
PgUp	Change to previous page. Pressing the PgUp key moves the display from the current page to a previous page of information. This is operational in the "Select Study" and "Directory Listing" menus and only if there are more studies (or files) than can fit on one page of display.
PgDn	Change to next page. Pressing the PgDn key moves the display from the current page to the next page of information. This is operational in the "Select Study" and "Directory Listing" menus and only if there are more studies (or files) than can fit on one page of display.
Ins	Change insert character mode. Pressing the Ins key toggles the insert character mode between on and off. It is operational when you are editing study names, filenames, and directory names. When the "insert character" mode is on, any character entered will be added to those existing. If the mode is off, any character entered will replace the existing character at the cursor location.
Del	Delete character. Pressing the Del key deletes the character at the current cursor position.
Alt-D	Delete the selected disk file. Pressing the Alt key and holding it down while pressing the "D" key deletes the currently selected file from the disk.
Alt-E	Edit the selected disk file with COED. Pressing the Alt key and holding it down while pressing the "E" key initiates editing the currently selected disk file with COED. This is operational only from the "Define data files" menu. The MENUFDA program invokes COED in a full screen mode and with "Help Program" files, if applicable. You may obtain on-line documentation for COED by pressing the F1 function key while in COED and by following subsequent instructions. A complete COED user's manual is stored in the file "COEDDOC.ARC" on the COED diskette. It may be extracted from the archive file and may be copied to a printer. Alternatively, a pre-printed manual is available from HEC. While in COED, you may get information from the "Help Program" files by pressing Alt-F1. This information should be available for the DAMCAL, EAD, SID, and SIDEDT data files which require a fixed format. It is not available for the SIDEDT user input commands. You access the help program feature by entering a valid two

character record identifier (e.g. "J1") in columns one and two of an input data file and then pressing Alt-F1. You can get descriptions for each input field of the input data by positioning the cursor at the desired field using the tab key and then by pressing the Alt-F1 key. COED then displays the description for that field. It is similar or identical to the description contained in the program user's manual. The COED user's manual contains a more detailed description of the help program.

Key(s)	Description
Alt-L	List the currently selected disk file with "LIST". Pressing the Alt key and holding it down while pressing the "L" key initiates listing the currently selected disk file. The currently selected disk file is indicated by the highlighted box. This is operational only from the "Define data files" menu. Documentation for the LIST program is located on the FDA Installation diskette labeled "Install FDA" in the file LIST.DOC. If you try to list an HECDSS file, the menu will attempt to list its associated catalog file. There is no protection against listing a binary data file.
Alt-P	Print the currently selected disk file using the MS-DOS PRINT command (or with "PROUT" if printing HEC-1, HEC-2, or HEC-5 output). Pressing the Alt key and holding it down while pressing the "P" key initiates printing the currently selected disk file. The currently selected disk file is indicated by the highlighted box. This is operational only from the "Define data files" menu. There is no documentation for the PROUT program. It merely converts the mainframe carriage control character into a code recognized by PC printers to assure proper pagination.
Alt-X	Execute the selected program. Pressing the Alt key and holding it down while pressing the "X" key initiates execution of the currently selected program (all data files must have been defined). This is operational from the "Select Program" and "Define Data Files" menus.

MENUFDA Associated Disk Files

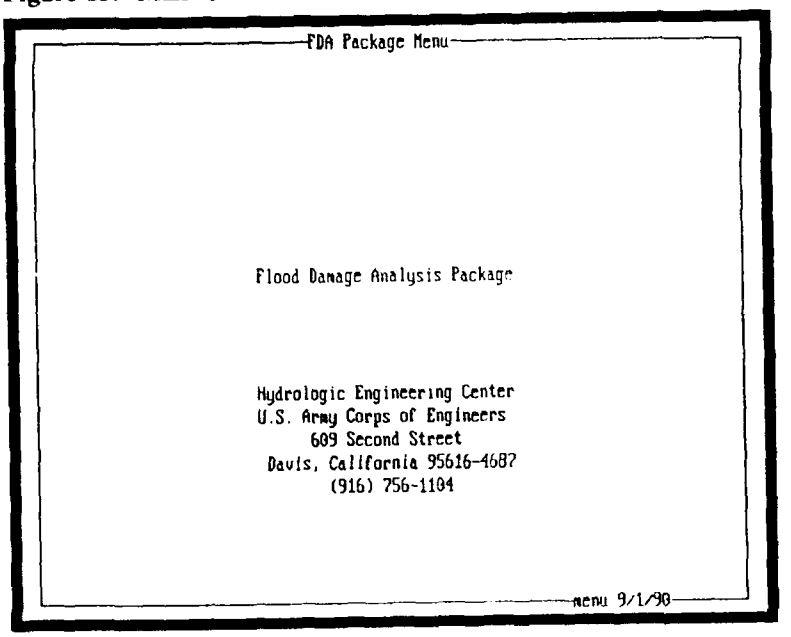
There are several important disk files associated with the menu program. They are described as follows:

File	Description
FDAMENU.DFT	Contains the last selected screen colors, output device, and study. After the first execution of the menu program, this file should always exist in the subdirectory [drive:]\HECEXE\SUP.
FDAMENU.SDY	Contains a cross-reference of study names and associated data subdirectories where all data for each study is stored. This file should be created if you install some of the test data when the Installation Program is run. After the first execution of the menu program, this file should always exist in the subdirectory [drive:]\HECEXE\SUP.
FDAMENU.FIL	Contains a listing of last selected file names, colors, devices, etc. for each study. After the first execution of the menu program for a given study, a file should exist in the subdirectory which contains data for that study. In other words, for each study, there should be a file named "FDAMENU.FIL". If there are ten studies, there should be ten files named "FDAMENU.FIL" located in appropriate subdirectories. For example, if data for the study "Silver Creek" is stored in the subdirectory "D:\DATA\FDA\TD21DATA", then the file "D:\DATA\FDA\TD21DATA\FDAMENU.FIL" will be created when that study is selected and files are edited.

DESCRIPTION OF MENUS IN MENUFDA

Banner

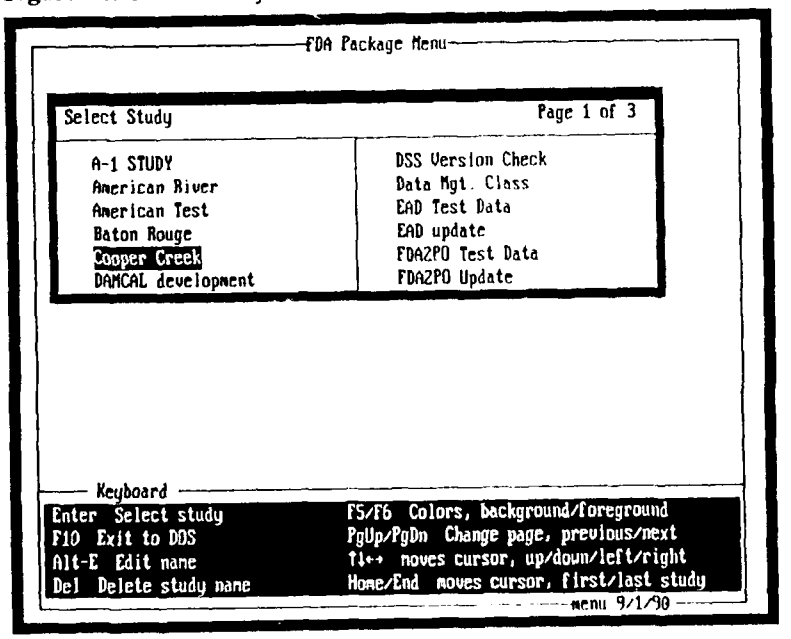
Figure 15: MENUFDA Banner



When executing the menu program, the "Banner" menu is the first information displayed. It gives HEC's address and phone number, the version date of the menu program, and the banner indicating that you are executing the MENUFDA program. This page will disappear after five to ten seconds. You can proceed to the next menu sooner by pressing any ASCII key (such as the <Enter> key or the <space bar>. The banner menu should appear as shown in Figure 15.

Select Study

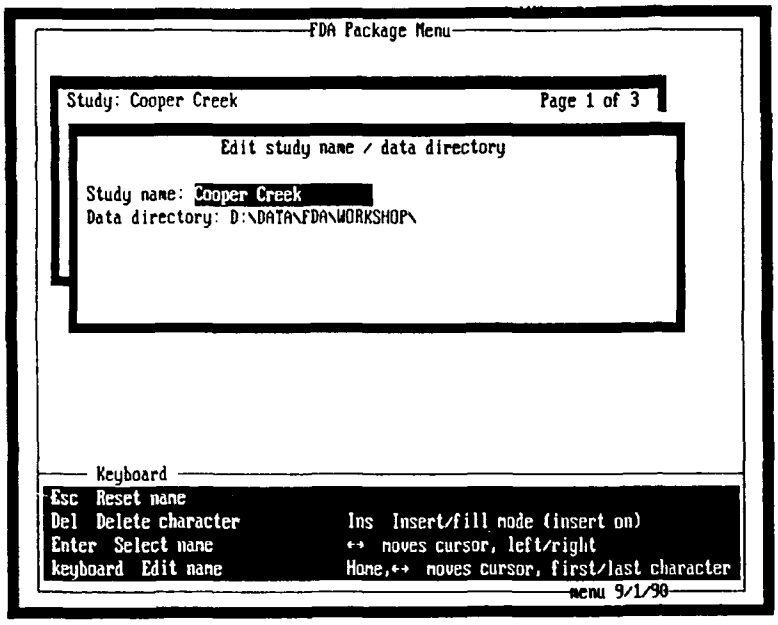
Figure 16: Select Study Menu



The "Select Study" menu allows you to select the study (or set of data) that you wish to analyze. You select a study by maneuvering the highlighted box over the desired study and pressing the <Enter> key. To enter a new study, position the highlighted box over the line "(specify new study)" and press the <Enter> key or begin entering a new study name. To edit an existing study, position the highlighted box over the study and press the "Alt-E" keys. The study menu should appear as shown in Figure 16.

Edit Study

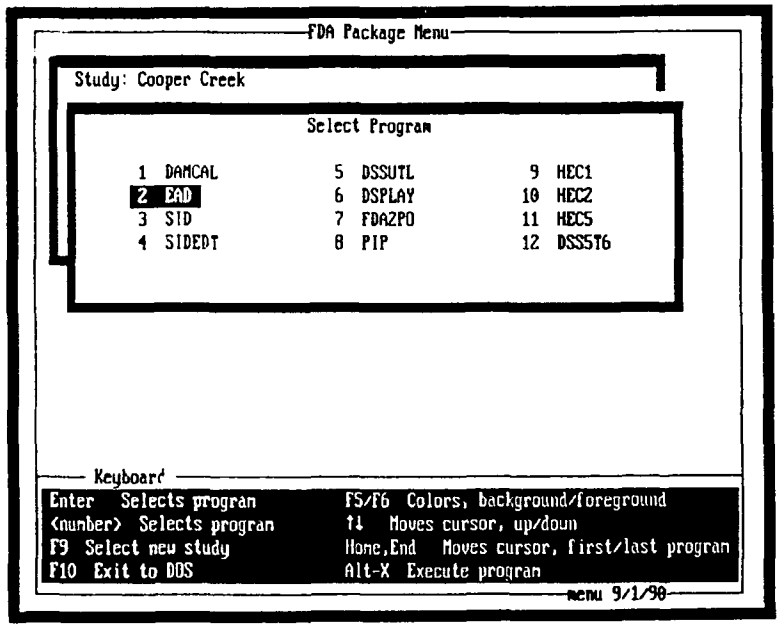
Figure 17: Edit Study Menu



For each study, there is an associated subdirectory name where the data is stored. Any time you enter a new study (or edit an existing study reference by entering "Alt-E"), you may edit the subdirectory into which the data will be entered. If data already exists in a subdirectory and you change the subdirectory, the data will not be moved to the new subdirectory. The subdirectory name is simply the location that the menu program searches to find data files for a given study. If you enter a new study or edit an existing study, the "Edit study name / data directory" menu should appear as shown in Figure 17.

Select Program

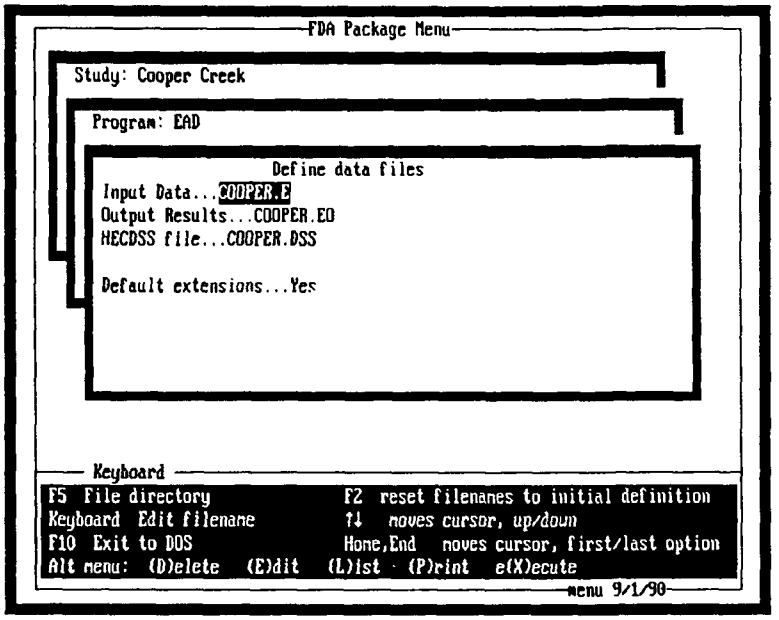
Figure 18: Select Computer Program



The "Select Program" menu allows you to indicate the program that you wish to execute or the program for which you wish to enter or edit data. You may select the program for which you wish to enter or edit data by either entering the appropriate integer (e.g., pressing the "2" key for the EAD program) or by maneuvering the highlighted box over the desired program and pressing the <Enter> key as shown in Figure 18. If you have already defined the appropriate data files for the desired program, you may execute the program from this menu by pressing and holding the "Alt" key and then pressing the "X" key (or alternatively the F8 function key).

Define Data Files

Figure 19: Define Data Files Menu

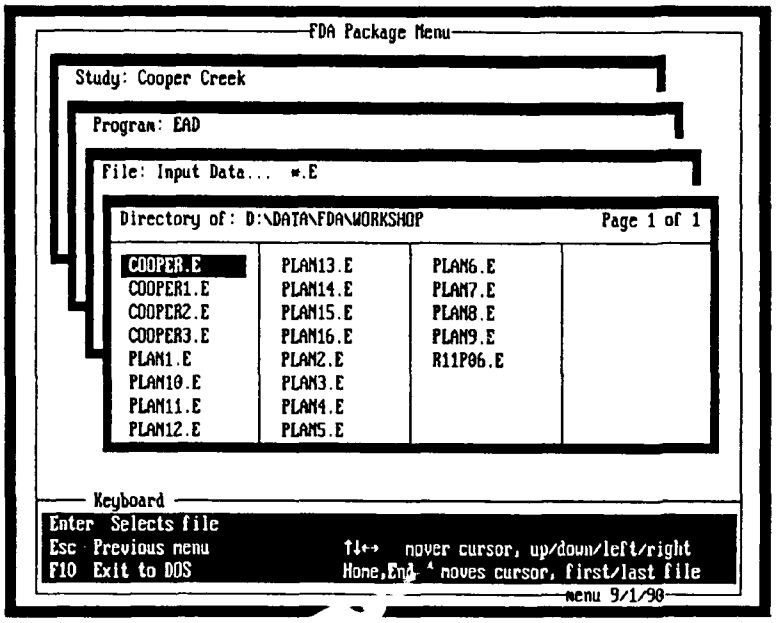


The "Define data file" menu allows you to enter the file names which contain the input data or output results for each program. To enter or edit a file name, position the highlighted box over the desired filename and then type the filename. If a filename has already been entered but you do not wish to use a file, enter the characters "NONE." (a period follows the characters "NONE") and then press the <Enter> key. The menu program will display the character string "(none)" and will not assign any file when the selected program is executed. (That FORTRAN unit is actually assigned to the default scratch file internal to each program.) The menu program assumes certain default filename extensions as described later in the "Default Data File Extensions" section. You may override these defaults by entering a period (".") followed by your desired extension. The menu program will use your defined extension for future definitions. This selection is stored in the file "FDAMENU.FIL" which is associated with the selected study. In addition to defining the data file names, you may edit, list, delete, and print files or execute the currently selected program from this menu. The following codes invoke these operations. You must press and hold down the "Alt" key and then press the appropriate key (such as the "L" key) for each operation.

Alt Key	Function Key	Operation
Alt-D	F3	Delete currently highlighted file.
Alt-E	F4	Edit currently highlighted file using COED.
Alt-L	F6	List currently highlighted file using the "LIST" program.
Alt-P		Print currently highlighted file using the "PROUT" program.
Alt-X	F8	Execute the currently selected program using the selected files displayed on the screen.

Data Directory List

Figure 20: Data Directory List



You may also define a data file by obtaining a file directory listing and selecting a file from this list. Figure 20 illustrates the Data Directory List. To get a file directory listing, you may do any one of the following:

F5 Pressing the F5 function key lists all files which have the current default extension. For example, the EAD data input files have the default extension ".E". If the "F5" key is pressed, the menu program initiates a "DIR *.E" DOS command, then sorts all of the files that meet that criteria, and displays them to the screen. The user may select a file by positioning the highlighted box over a file and pressing the <Enter> key. If the desired file does not exist, press the "Esc" key to return to the previous menu.

. Entering the characters "*.*" lists all files (up to a maximum of 300 files) which are in the current default directory. You may select the desired file by positioning the highlighted box over the desired file and pressing the <Enter> key.

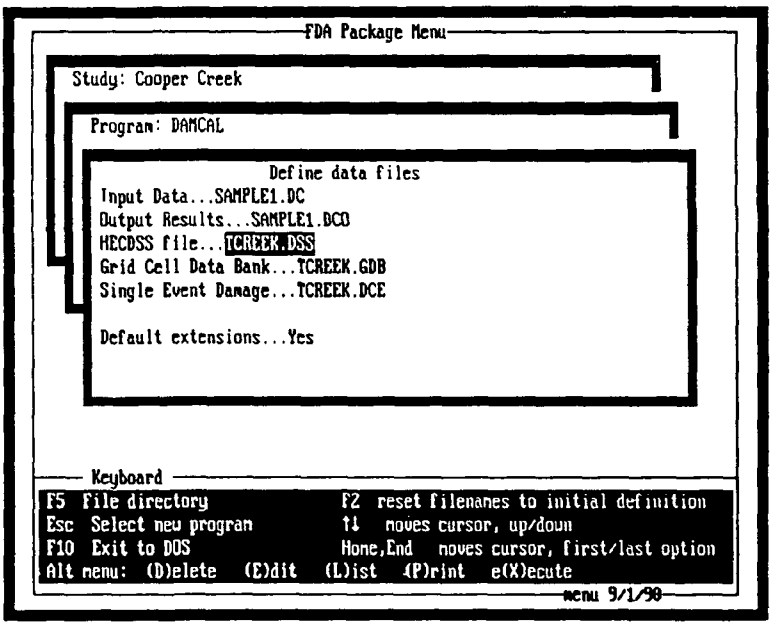
SLV01??.E Entering "SLV01??.E" lists any file meeting the user specified file mask "SLV01??.E" (or any other file mask). You may select the desired file by positioning the highlighted box over the desired file and pressing the <Enter> key.

Default Data File Extensions

The menu program assumes certain file extensions for each file (including no extension in some cases). The assumed default extension will be used unless you override it by changing the "Default extensions" option to "NO', entering the filename, followed by a period (".") and up to three characters. If no characters are entered after the period, then no extension is used. For example, the EAD input data files use the default extension ".E", while the EAD output data files use the default extension ".EO", and the HECDSS data files use the extension ".DSS". The sections below illustrate these default extensions used by the menu program. The default extensions are displayed by using the filename "EXAMPLE" or some valid file name and showing the resulting menu for each program. **These examples show every file defined for every program for information purposes only. In general, only some of the files for each program need be defined.** For the EAD program, the input file name is "COOPER.E" and the output file name is "COOPER.EO".

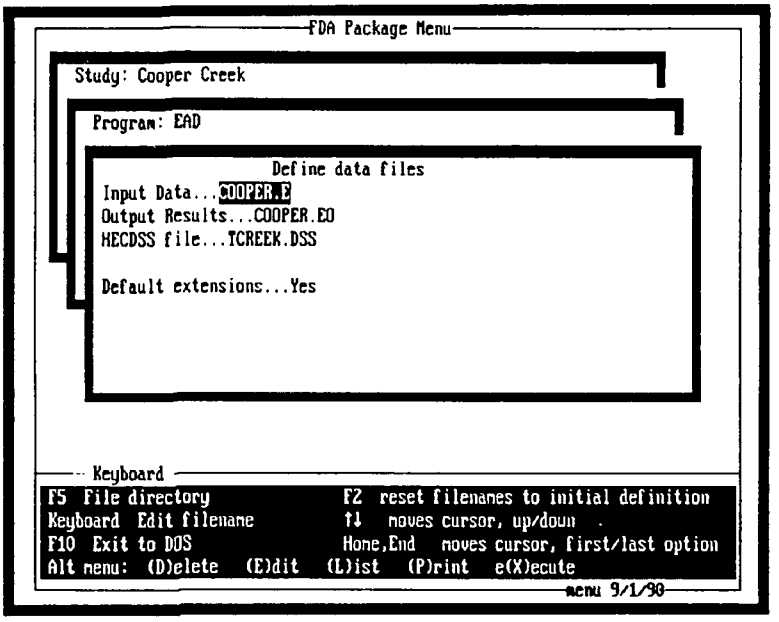
DAMCAL

Figure 21: DAMCAL Menu



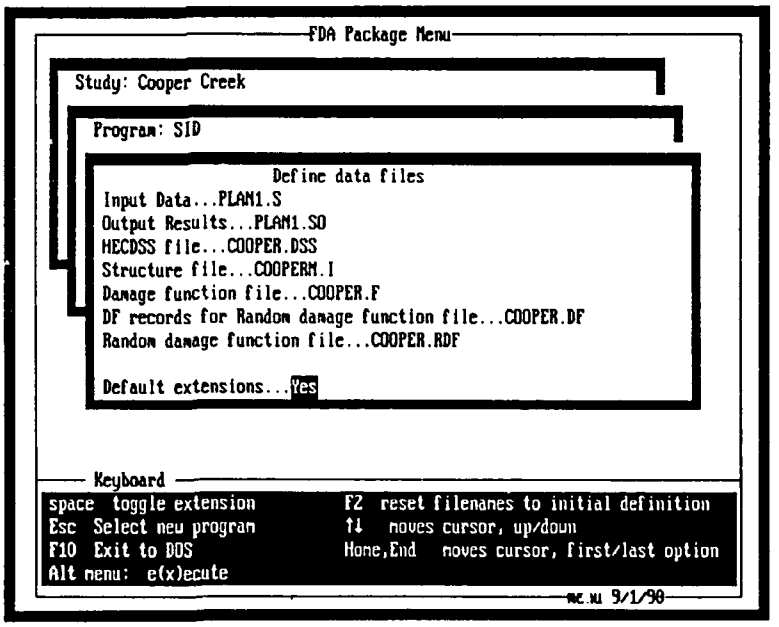
EAD

Figure 22: EAD Menu



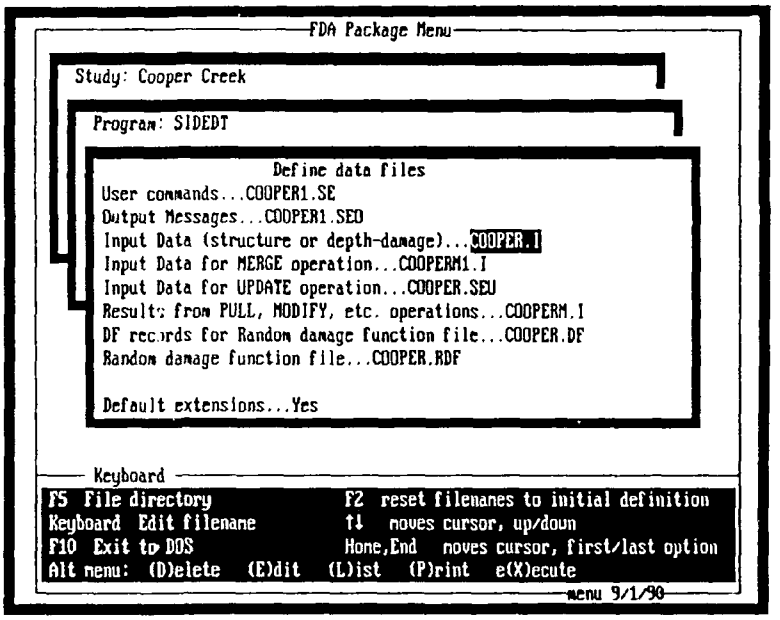
SID

Figure 23: SID Menu



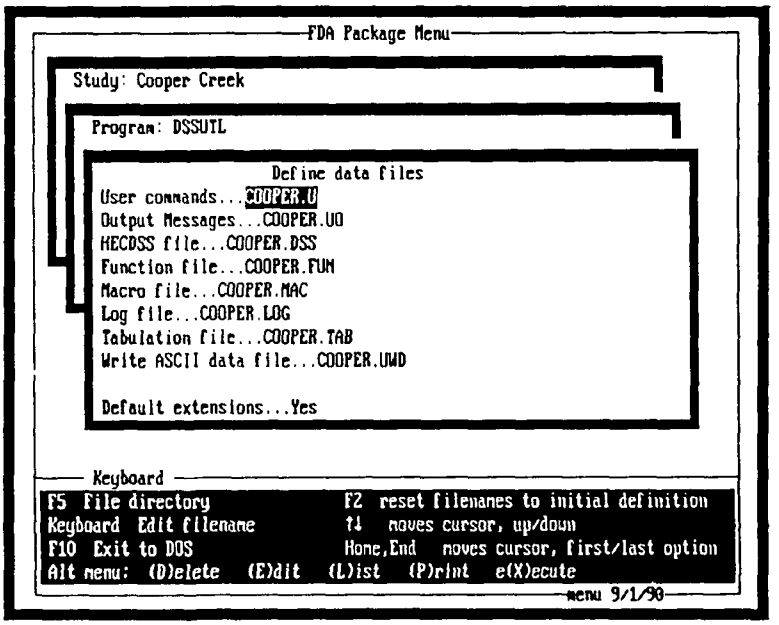
SIDEDT

Figure 24: SIDEDT Menu



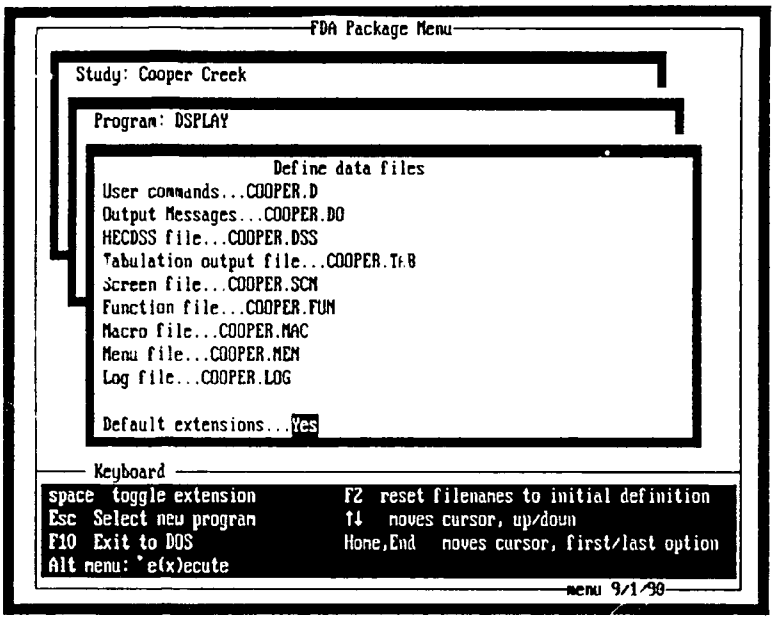
DSSUTL

Figure 25: DSSUTL Menu



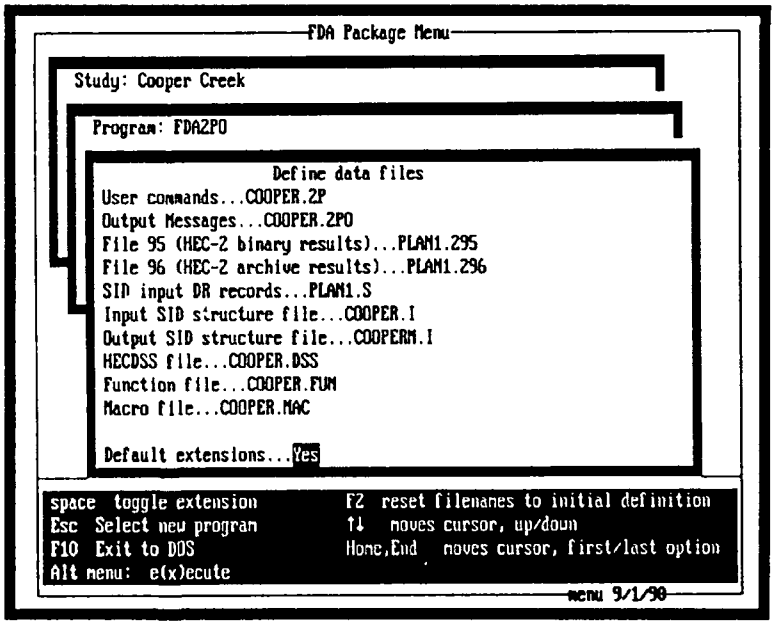
DSPLAY

Figure 26: DSPLAY Menu



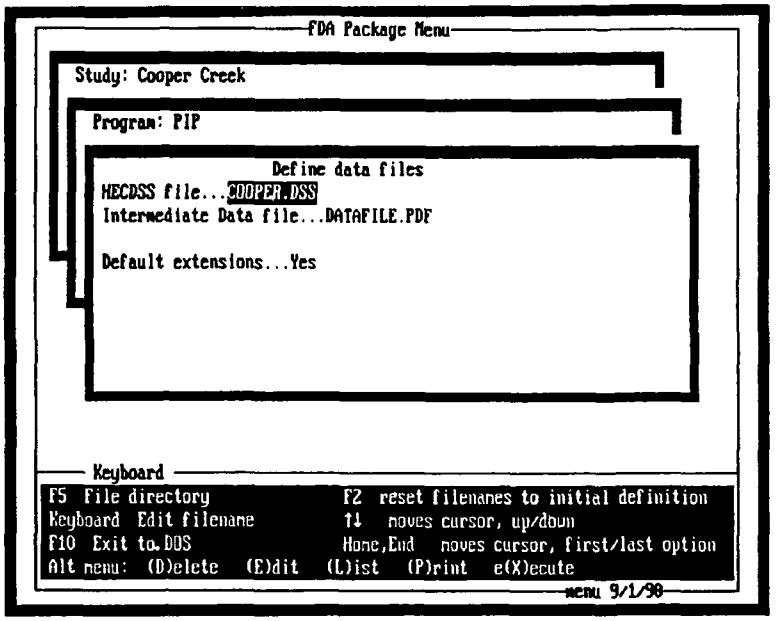
FDA2PO

Figure 27: FDA2PO Menu



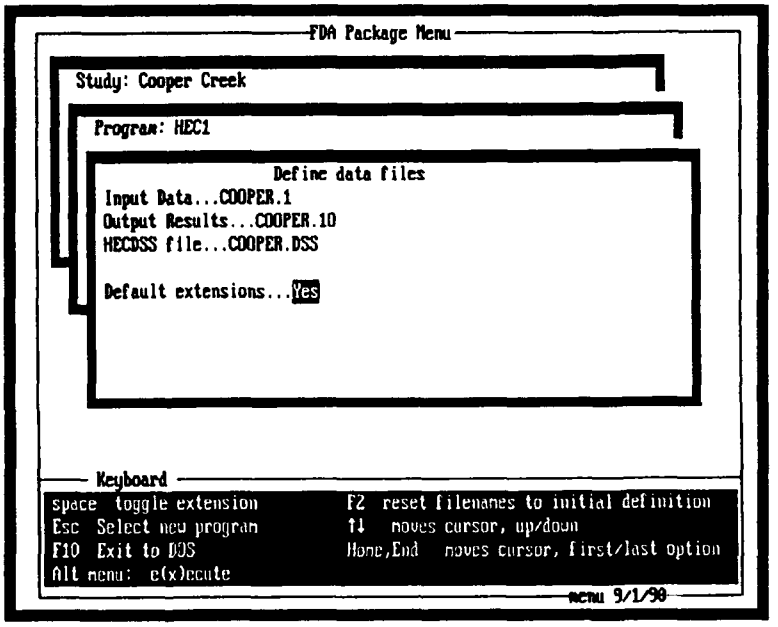
PIP

Figure 28: PIP Menu



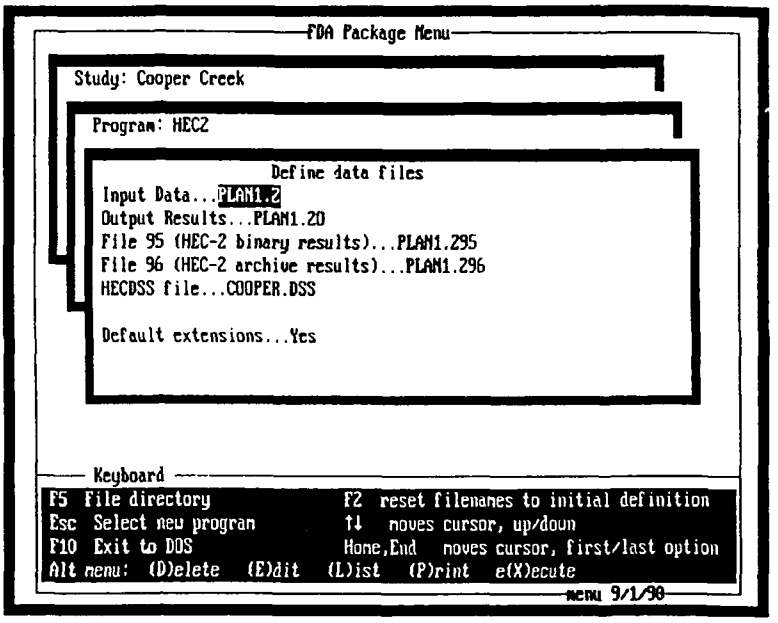
HEC-1

Figure 29: HEC-1 Menu



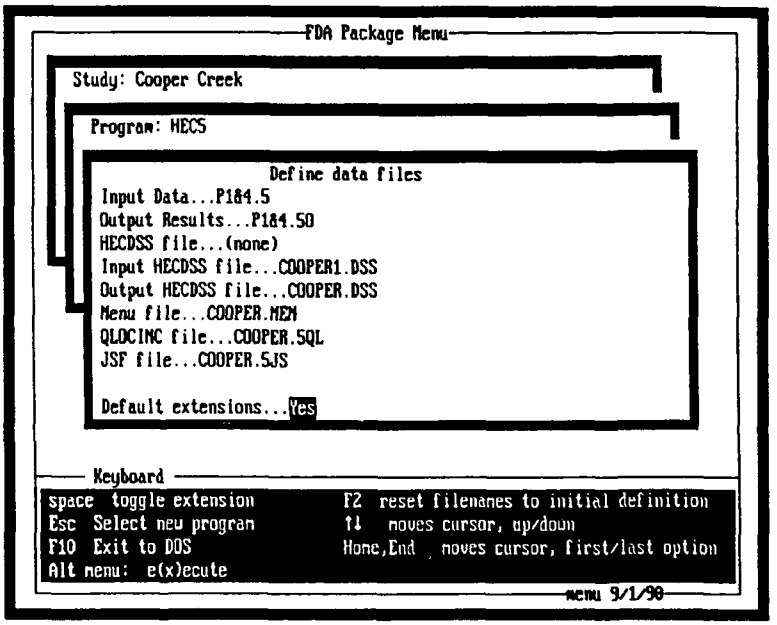
HEC-2

Figure 30: HEC-2 Menu



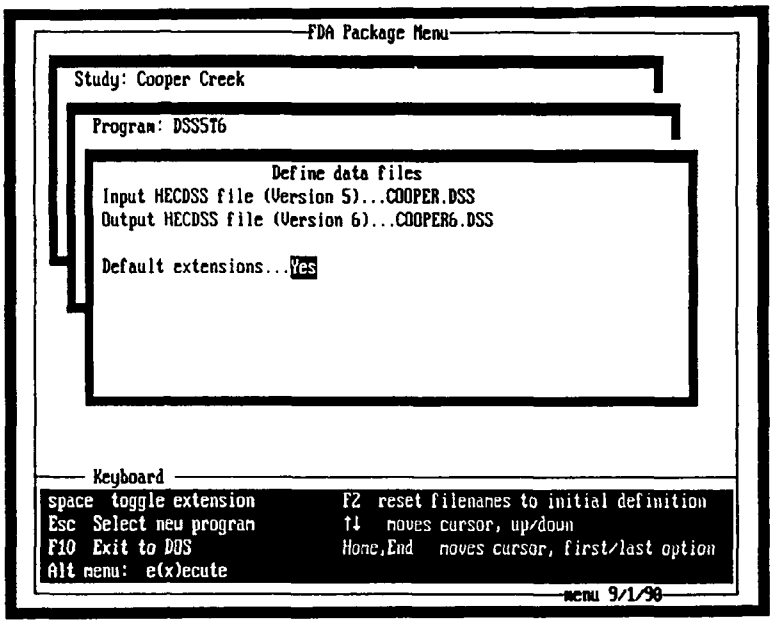
HEC-5

Figure 31: HEC-5 Menu



DSS5T6

Figure 32: DSS5T6 Menu



REFERENCES

1. Corps of Engineers, U. S. Army, "Flood Damage Analysis Package User's Manual", Hydrologic Engineering Center, Davis, CA, April 1988.

2. Graphic Software Systems, Inc., 9590 S.W. Gemini Drive, Beaverton, OR 97005.

3. Spindrift Laboratories, "The SPINDRIFT Library, A Subroutine Library for Use with the IBM Personal Computer and Microsoft Fortran Version 4.00", Spindrift Laboratories, 116 South Harvard Avenue, Arlington Heights, IL 60005, (708) 255-6909, June 1, 1987.

4. PKWARE, Inc., "PKWARE Version 1.0, The File Compression System Where Speed and Small Spaces Make a Big Difference", PKWARE, Inc., 7545 North Port Washington Road, Suite 205, Glendale, WI 53217, October 1989.

5. Corps of Engineers, U. S. Army, "Structure Inventory for Damage Analysis (SID) User's Manual", Hydrologic Engineering Center, Davis, CA, June 1989.

6. Corps of Engineers, U. S. Army, "Structure Inventory for Damage Analysis Edit Program (SIDEDT) User's Manual", Hydrologic Engineering Center, Davis, CA, 1983.

7. Corps of Engineers, U. S. Army, "Damage Reach Stage-Damage Calculation (DAMCAL) User's Manual", Hydrologic Engineering Center, Davis, CA, 1979.

8. Corps of Engineers, U. S. Army, "Expected Annual Flood Damage Computation (EAD) User's Manual", Hydrologic Engineering Center, Davis, CA,1989.

9. Corps of Engineers, U. S. Army, "Flood Hydrograph Package (HEC-1) User's Manual", Hydrologic Engineering Center, Davis, CA,1987.

10. Corps of Engineers, U. S. Army, "Water Surface Profiles (HEC-2) User's Manual", Hydrologic Engineering Center, Davis, CA,1982.

11. Corps of Engineers, U. S. Army, "Simulation of Flood Control and Conservation Systems (HEC-5) User's Manual", Hydrologic Engineering Center, Davis, CA, April 1982.

12. Corps of Engineers, U. S. Army, "Interactive Paired-Function Input Program (PIP) User's Manual", Hydrologic Engineering Center, Davis, CA, January 1986.

13. Corps of Engineers, U. S. Army, "HECDSS User's Guide and Utility Program Manuals", Hydrologic Engineering Center, Davis, CA, 1990.

14. Corps of Engineers, U. S. Army, "Hydrologic and Economic Simulation of Flood Control Aspects of water Resources Systems", Technical Paper Number 43, Hydrologic Engineering Center, Davis, CA, August 1985.

15. Corps of Engineers, U. S. Army, "Flood Damage Assessments Using Spatial Data Management Techniques", Technical Paper Number 57, Hydrologic Engineering Center, Davis, CA, May 1978.

16. Corps of Engineers, U. S. Army, "Engineering and Economic Considerations in Formulating Nonstructural Plans", Technical Paper Number 103, Hydrologic Engineering Center, Davis, CA, January 1985.

17. Corps of Engineers, U. S. Army, "Comprehensive Flood Plain Studies Using Spatial Data Management Techniques", Technical Paper Number 47, Hydrologic Engineering Center, Davis, CA, October 1976.

18.Corps of Engineers, U. S. Army, "Interactive Nonstructural Flood-Control Planning", Technical Paper Number 68, Hydrologic Engineering Center, Davis, CA, June 1980.

19. Corps of Engineers, U. S. Army, "The Hydrologic Engineering Center Experience in Nonstructural Planning", Technical Paper Number 96, Hydrologic Engineering Center, Davis, CA, February 1984.

20. Corps of Engineers, U. S. Army, "Flood Control System Component Optimization HEC-1 Capability", Training Document Number 9, Hydrologic Engineering Center, Davis, CA, September 1977.

21. Corps of Engineers, U. S. Army, "Analytical Instruments for Formulating and Evaluating Nonstructural Measures", Training Document Number 16, Hydrologic Engineering Center, Davis, CA, January 1982.

22. Corps of Engineers, U. S. Army, "Application of Spatial Data Management Techniques to HEC-1 Rainfall-Runoff Studies", Training Document Number 19, Hydrologic Engineering Center, Davis, CA, October 1983.

23. Corps of Engineers, U. S. Army, "Guide Manual for the Creation of Grid Cell Data Banks", Training Document Number 2, Hydrologic Engineering Center, Davis, CA, September 1978.

24. Corps of Engineers, U. S. Army, "A Tutorial on Creating a Grid Cell Land Cover Data File from Remote Sensing Data", Training Document Number 22, Hydrologic Engineering Center, Davis, CA, June 1985.

APPENDIX A: SUPPLEMENTAL COMPUTER PROGRAM INSTRUCTIONS

Introduction

This Appendix contains supplemental instructions for the programs contained in the personal computer version of the FDA Package. They document either capabilities that have been added to each program subsequent to the last printing of the user's manual, capabilities that have not been included in the preliminary version of the program, or characteristics unique to the personal computer.

DAMAGE REACH STAGE-DAMAGE CALCULATION (DAMCAL)

The computer program DAMCAL can evaluate a broad range of alternative flood damage reduction measures that will provide flood damage relief for existing and future land use conditions. It accesses a geographic information system (GIS) data base file from which it extracts information for flood damage computations. This information includes: topographic elevation, reference flood elevation, damage reach delineation, existing land use classification, and alternative future land use patterns. Each alternative analysis results in the creation of an aggregated elevation-damage function for each land use category at each damage reach index location. The aggregated elevation-damage function can then be stored in a DSS file by following the supplemental instructions listed below.

J3 Record: Third Job Record (Required Record)

This record defines the sequence numbers of the data variables used in the analysis and the number of categories for particular data variables.

Field	Variable	Value	Description
0-8	...	...	No change. Fields defined as before.
9	GSIZE		Grid cell size and analysis control
		-	DAMCAL will calculate and print an elevation-structures flooded table.
		+	The grid cell size in acres. DAMCAL will develop an elevation-area table.
10	NDUR	0	No duration damage functions.
		+	The number of duration values entered for duration-damage functions. Variable INPET (field LU.2) must be less than zero. Depth and duration values are entered immediately after the LT record. If changes are made (variable CHANGE, field LC.7 is less than zero), then revised numbers are entered after the LC records.

ZW Record -- Write elevation-damage function to a DSS file

The **optional** ZW record requests the DAMCAL program to store elevation-damage and elevation-area functions in a data storage system (DSS) data file. The functions are stored by land use for each reach. The pathname parts A, E, and F may be entered in either of two formats:

(1) The "HEC standard" method in which the parts are entered in free format. Each part is preceded by the part identifier (A, E, or F) and an equal sign. A blank column follows each part name. The characters **ZW** must be entered in columns one and two. Columns 3 and 4 may contain the option ".A" to store the elevation-area matrix. The format for entering the parts is:

ZW A=study E=data year F=alternative or plan

An example user entry using this format is:

ZW A=SILVER CREEK E=1990 F=BASELINE

(2) The "old" method in which the parts are entered in fixed format is documented below. Part A is entered in columns 3 through 16, part F in columns 17 through 40, and part E in columns 45 through 48.

Field	Variable	Value	Description
0	KODE	ZW	Record identification.
1-2	PROJ(1)	AN	Project pathname label (part A).
3-5	ALT	AN	Alternative pathname label (part F).
6 (45-48)	IYR	AN	Output data year (part E) to be specified in pathname label.
7	IAREA	0	Do <u>not</u> write the elevation-area matrix to the HECDSS data file.
		1	Write the elevation-area matrix to the HECDSS data file.

DT Record --- Damage Reach Title Record

The DT record labels the damage reach and provides the unique identifier (name or location) for each reach.

Field	Variable	Value	Description
0		DT	Record Identification.
1		(AN)	Damage reach location or name (part B of the DSS pathname).
2-10		(AN)	Description of the damage reach on the preceding DR record (DR.1).

File Assignments

The key words used to assign files when the program is executed have been changed. If you use the menu program to execute the programs, you need not worry about these key words. However, if you execute on the Harris or don't use the menu program, you need to know these key words. To determine the current definition, enter the command:

DAMCAL ?

The results from this command should look similar to the following:

```
DAMCAL - Version Date: March 1, 1990
   UNIT      KEYWORD          *ABREV     **MAX   DEFAULT
      2      SINGLE-EVENT     S            64    SCRATCH.002
      4      FILE4            F            64    SCRATCH.003
      5      INPUT            I            64    CON
      6      OUTPUT           O            64    CON
      8      FILE8            FILE8        64    SCRATCH.004
      1      DATA BANK        D            64    SCRATCH.001
    NOP      DSS FILE         DS           64    SCRATCH.031

   * ABREV - SHORTEST ABBREVIATION ALLOWED FOR KEYWORD
   ** MAX - MAXIMUM # OF CHARACTERS FOR FILENAME (OR STRING)
Stop - Program terminated.
```

EXPECTED ANNUAL FLOOD DAMAGE COMPUTATION (EAD)

The **EAD** Computer Program User's Manual was updated in March 1989. Since this update, several changes have been made to the program including:

Grand Summary of Undiscounted EAD

The **EAD** output includes a grand summary table of undiscounted expected annual damage when equivalent annual damage is calculated as shown in Table 2. One table is output for each plan. Each table summarizes the expected annual damage for all damage categories and all reaches.

Table 2: Grand Summary of Undiscounted EAD

TEST NO. 2 -- PERIOD OF RECORD ANALYSIS WITH PRINTOUT SUPPRESSION
BASIN DEVELOPMENT FOR 1976, 1990, AND 2020
DAMAGE VALUES IN $1000

** EXPECTED ANNUAL FLOOD DAMAGE **
** GRAND TOTAL FOR ALL DAMAGE REACHES
** PLAN 1 = WITHOUT PROJECTS
** INPUT DATA YEARS = 1976 1990 2020
** PERIOD OF ANALYSIS = 100 YEARS
** DAMAGE BASE = JUNE 1974 DOLLARS

	STUDY	BASE	.... DECADE YEARS					END OF
DAMAGE	YEAR	YEAR	10	20	30	40	50	PERIOD
CATEGORIES	1976	1981	1990	2000	2010	2020	2030	2080
1 AGRIC	324.46	358.71	420.12	433.70	447.75	462.22	462.22	462.22
2 SERVICE	65.67	71.01	80.61	82.86	85.19	87.59	87.59	87.59
3 URBAN	383.98	411.62	461.86	478.91	496.30	513.95	513.95	513.95
TOTAL	774.12	841.34	962.59	995.48	1029.24	1063.76	1063.76	1063.76

Footnotes To Frequency-Damage Table

Frequency-damage tables include a footnote character when interpolated results are truncated because discharge-elevation functions and/or elevation-aggregated damage matrices do not cover the desired range of exceedance frequency. Table 3 depicts a typical computed matrix in which interpolated elevations and damage have been truncated. In this example, the discharge-elevation function did not extend as high as the flow-frequency curve. The footnote "b" indicates that the elevation-damage matrix goes higher than the discharge-elevation function but that the discharge-elevation function was not higher than the frequency curve. The footnote "b" is replaced by a "c" if both the highest ordinate on the

Table 3: Frequency-Damage Truncation

++DAMAGE DATA, REACH RCH11 FOR PLAN 1 -- EXISTING COND. - USES BASE QF,QS,DG DATA

	FREQ	FLOW	STAGE	RESIDENT	GAS STAT	SCHOOL	CHURCH	OTHER	TOTAL	ACC EAD
1	99.00	303.	617.25	.00a	.00a	.00a	.00a	.00a	.00	18.93
2	60.00	1304.	620.88	.00a	.00a	.00a	.00a	.00a	.00	18.93
3	50.00	1544.	621.44	.00	.00	.00	.00	1.80	1.80	18.90
4	40.00	1818.	622.06	.00	.00	.00	.00	13.11	13.11	18.19
5	30.00	2151.	622.44	.00	.00	.00	.00	19.13	19.13	16.55
6	20.00	2595.	622.95	.00	.00	.00	.00	21.09	21.09	14.51
7	15.00	2896.	623.21	6.23	.00	.00	.00	21.62	27.84	13.31
8	10.00	3290.	623.52	21.62	.00	.00	.00	23.63	45.26	11.54
9	7.00	3603.	623.73	37.09	.00	.00	.00	25.94	63.04	9.93
10	5.00	3893.	623.92	61.15	.00	.00	.00	28.20	89.36	8.43
11	3.00	4338.	624.19	98.63	.00	.00	.00	31.44	130.07	6.26
12	2.00	4697.	624.39	130.62	.00	.00	.00	33.99	164.62	4.81
13	1.00	5428.	624.75	190.57	.00	.00	.00	38.96	229.52	2.88
14	.50	6124.	625.06	240.20	.00	.00	.00	43.24	283.44	1.60
15	.20	6858.	625.38	284.73	.00	.00	.00	47.62	332.35	.69
16	.10	7503.	625.47a	297.05b	.00b	.00b	.00b	48.81b	345.86	.35
EXP ANNUAL DAMAGE				9.32	.00	.00	.00	9.61	18.93	

Note: (a) Truncation; (b) Rating curve truncated

elevation-damage matrix is lower than the highest ordinate on the discharge-elevation function and the highest ordinate on the discharge-elevation function is lower than the highest point on the frequency curve.

Error With More Than Seven Plans

An error in the expected annual damage summary tables has been corrected. It sometimes occurred only if more than seven plans were analyzed and only in one plan.

Calculation Status On the Personal Computer

The scrolling status printout has been replaced by a fixed screen display of the computation status. It displays a more detailed status of calculations.

Suppression of Output - Truncation Notes and Affluence

The user may suppress the output from the affluence calculations as well as the output of interpolation truncation footnotes.

PP Record - Printout and Punch Options (Optional Record)

This record may be inserted at any time along with reach input data to activate or deactivate desired printout and/or punch options. The specified options remain in effect until another PP record is encountered.

Field	Variable	Value	Description
0-2	...	...	No change. Definitions remain the same.
3	JDGPR (0)	+	The sum of the following printout suppression options that are desired for expected annual damage routines. For example, a value of 15 will suppress all output for each reach and only the final job summary will be output. Some of the test data in Exhibit 4 illustrates the use of this option.
		0	No output will be suppressed.
		1	Suppress printout of input data for each damage reach.
		2	Suppress printout of computed damage for each flow or stage (usually associated with an exceedance frequency).
		4	Suppress printout of expected annual damage (EAD) as computed. Results of EAD will only appear in the summary tabulation.
		8	Suppress printout of expected annual damage by decades and equivalent annual flood damage for each plan of each reach.
		16	Suppress summary by reach for each category.
		32	Suppress grand summary by reach for total damage.
		64	Suppress all summary output.

Field	Variable	Value	Description
		128	Suppress footnotes in the frequency-damage tabular output.
		256	Suppress the detailed output from affluence calculations.

File Assignments

The key words used to assign files when the program is executed remain the same. If you use the menu program to execute the programs, you need not worry about these key words. However, if you execute on the Harris or don't use the menu program, you need to know these key words. To determine the current definition, enter the command:

EAD ?

The results from this command should look similar to the following:

```
EAD - Version date: March 1, 1990
   UNIT      KEYWORD          *ABREV     **MAX   DEFAULT
      5      INPUT            I            64    CON
      6      OUTPUT           O            64    CON
      7      PUNCH            P            64    SCRATCH.001
     29      TRACE            T            64    SCRATCH.002
      8      FILE8            F            64    SCRATCH.008
      9      FILE9            FILE9        64    SCRATCH.009
    NOP      DSSFILE          D            64    SCRATCH.031

   * ABREV - SHORTEST ABBREVIATION ALLOWED FOR KEYWORD
   ** MAX - MAXIMUM # OF CHARACTERS FOR FILENAME (OR STRING)
Stop - Program terminated.
```

An example user entry to execute the program on the Harris (or on the personal computer if you are not using the menu program) may look like the following:

EAD I=SLV01.E O=SLV01.EO DSS=SILVER.DSS

STRUCTURE INVENTORY FOR DAMAGE ANALYSIS (SID)

The SID Computer Program User's Manual was updated in March 1989. Since this update, several changes have been made to the program.

Observing the Maximum Limits For Floodproofing

If the user specifies a maximum floodproofing or raise-to-target limit and that limit would be exceeded, SID will print a message and reduce the floodproofing limit to the specified maximum. This change is documented in the sample data sets of the SID manual. The limits are entered on the DC records.

Sampling Using the SL Record

If one set of SL and SD records represents more than one structure, the number of structures may be entered in columns 76-80 of the SL record. This value is then used in the flood zone summary tables.

SL RECORD (Required)

Field	Variable	Value	Description
0-9	...	...	**Defined as before.**
10	NUBLDG		Allows sampling while maintaining an accounting of the number of structures in each flood zone.
		0 or 1	Entry on this set of SL, SD, etc. records represents 1 structure.
		+	Entry on this set of SL, SD, etc. records represents NUBLDG structures. The total accumulated value for NUBLDG structures is entered on the SD records. The variable NUBLDG is used in the flood zone summaries to indicate the number of structures in each flood zone. For example, if this set of SL and SD records reflects 10 structures having an average value of $125,000, NUBLDG is set to 10 and V1FS on the SD record is set to 1250 (one million two hundred fifty thousand dollars).

Additional Results Written to the HECDSS Data File

SID writes additional information to the HECDSS file including flood zone summary information for aggregated damage, value of structures, and number of structures. Flood zone summaries include tables for structure value based on zero damage elevations. The information written to the HECDSS data file may be suppressed using the variable IODSS, field J2.10.

Modification To J2 Record

Field	Variable	Value	Description
0-9	...		No change in definition.
10	IODSS		Controls the output of results to the HECDSS data file. Each type of output is controlled by summing the following suppression numbers. For example, an entry of 6 would suppress the storage of flood-zone summary and event-damage information.
		0	No suppression. All of the results are written to the DSS data file.
		1	Suppress the storage of the elevation-damage matrices. These are the ones used by the EAD program.
		2	Suppress the storage of the flood-zone summaries.
		4	Suppress the storage of the event-damage results. The values used on the ST record are used as the ordinates of the first variable. If numeric values are entered, they are stored as numeric. If character values are entered, the first four characters are stored.

Computing the Reference Flood Elevation

In the past, the user must enter the reference flood elevation for each structure in field SL.5 for every structure. Now, the user may automatically compute this elevation using the results from HEC-2 and the HEC-2 post-processor program FDA2PO. To facilitate this, the user must identify the river mile associated with each structure. The FDA2PO program uses the river mile to interpolate the computed water surface elevation from the HEC-2 calculated water surface profile and stores it in field SL.5 of the SID structure input data stream. The river mile is entered in field SO.9.

Calculation Progress On the Personal Computer

The scrolling status printout has been replaced by a fixed screen display of the computation status. It displays a more detailed status of calculations. On the personal computer, the SID program issues a message indicating the status of calculations. Sometimes, it may seem that your computer is "hung" - nothing is being processed. To help alleviate this problem, the program issues a message at the conclusion of the elevation-damage function for every ten structures. On faster machines, this message appears frequently (once every ten seconds or less). On slower machines, this message may appear infrequently (once every minute or two).

File Assignments

The key words used to assign files when the program is executed remain the same as the previous version. If you use the menu program to execute the programs, you need not worry about these key words. However, if you execute on the Harris or don't use the menu program, you need to know these key words. To determine the current definition, enter the command:

SID ?

The resulting output should look similar to the following:

```
SID - Version Date: March 1, 1990
   UNIT      KEYWORD          *ABREV    **MAX   DEFAULT
      5      INPUT            I           64    CON
      6      OUTPUT           O           64    CON
     11      STRUCTURE        S           64    SCRATCH.001
     12      DMGFUNC          D           64    SCRATCH.002
     13      F13              F           64    SCRATCH.032
     14      F14              F14         64    SCRATCH.003
    NOP      DSSFILE          DS          64    SCRATCH.031
     92      DFRECS           DF          64    SCRATCH.004
    NOP      RANDMG           R           64    SCRATCH.033

   * ABREV - SHORTEST ABBREVIATION ALLOWED FOR KEYWORD
   ** MAX - MAXIMUM # OF CHARACTERS FOR FILENAME (OR STRING)
Stop - Program terminated.
```

The key words reflect the purpose of each unit. The most significant units are:

Keyword	Abbrev.	Purpose
STRUCTURE	S	Contains sequential structure records.
DMGFUNC	D	Contains sequential damage functions.
DFRECS	DF	Contains DF records associated with the damage functions contained on the random damage file.
RANDMG	R	Contains damage functions stored in a random access format.

STRUCTURE INVENTORY FOR DAMAGE ANALYSIS EDIT PROGRAM (SIDEDT)

The SIDEDT program is unchanged for the most part. However, it was modified for the last release so that it is more "user friendly" to the person entering commands from the keyboard (as opposed to reading commands from a file).

User Input Error Correction

The SIDEDT program will not abort if you enter an incorrect command from the keyboard. Instead, it will display a brief description of the command that it thinks you are entering. If it can not determine the command that you have entered, it will display a list of all valid commands. It will not give you a description of each command. SIDEDT sometimes accepts incomplete commands and produces no error messages. For example, if the user enters the following command:

READ TYPE

SIDEDT does not recognize that it is an incomplete command and will not issue an error message. If the user attempts other operations, they will fail because SIDEDT does not know the type of data the user wishes to process.

Generation of Random Damage Function File

The user must let the SIDEDT program generate a random access damage function file. Harris versions of SID and SIDEDT cannot converse with random access damage function files created with older versions of the programs or files generated with the use of the JCL command "$GE filename R".

File Assignments

The key words used to assign files when the program is executed are the same as the previous version. If you use the menu program to execute the programs, you need not worry about these key words. However, if you execute on the Harris or don't use the menu program, you need to know these key words. To determine the current definition, enter the command:

SIDEDT ?

The resulting output should look similar to the following:

```
SIDEDT - Version date: March 1, 1990
   UNIT      KEYWORD          *ABREV     **MAX   DEFAULT
      5      IN               I          64      CON
      6      OUT              O          64      CON
      8      DIN              D          64      SCRATCH.001
      9      MERGE            M          64      SCRATCH.002
     10      UPDATE           U          64      SCRATCH.003
     11      SCRATCH          S          64      SCRATCH.004
     12      DOUT             DO         64      SCRATCH.005
     92      DFRECS           DF         64      SCRATCH.006
    NOP      RANDMG           R          64      SCRATCH.031

   * ABREV - SHORTEST ABBREVIATION ALLOWED FOR KEYWORD
   ** MAX - MAXIMUM # OF CHARACTERS FOR FILENAME (OR STRING)
Stop - Program terminated.
```

The key words reflect the purpose of each unit. The most significant units are:

Keyword	Abbrev.	Purpose
DIN	DI	Contains either sequential damage functions or sequential structure records. This is considered to be "FILE8" for use in the input commands.
MERGE	M	Contains either sequential damage functions or sequential structure records when they are to be merged with those contained in the "DIN" file (or unit 8). This is considered to be "FILE9" for use in the input commands.
UPDATE	U	Contains new values which will update those existing in the "DIN" file (or unit 8). This is considered to be "FILE10" for use in the input commands.
DOUT	DO	Contains the output sequential damage function or structure data after an edit command is executed. This is considered to be "FILE12" for use in the input commands.
DFRECS	DF	Contains the damage function DF records generated when a random access damage function file is created. This is considered to be "FILE92" for use in the input commands.
RANDMG	R	Contains the damage functions in a random access format. This unit may be used as either an input or output unit. This is considered to be "FILE98" for use in the input commands.

The MENUFDA program does not allow the user to define a filename for unit 11. At the conclusion of the SIDEDT execution, the scratch file associated with unit 11 is deleted. It is recommended that you perform only one SIDEDT operation before redefining your data files. However, if you are an experienced user, you may perform multiple edit operations. However, you must never conclude editing when your desired output results have been written to unit 11 because you will lose them --- always conclude your editing with the final results stored on the "DOUT" file (or unit 12).

DATA STORAGE SYSTEM DISPLAY PROGRAM (DSPLAY)

The version of the HECDSS - DSPLAY program included with the FDA Package is a "working" version. Separate documentation describes the DSPLAY program both in a user's manual (13) and in the appendix to this manual. The sections below describe some of the differences between the documented DSPLAY and that included with this Package.

Graphics Drivers

HECDSS - DSPLAY utilizes a library of subroutines and device drivers to generate plots. The device drivers are supplied on the "drivers" diskettes. Our licensing agreement allows you to make only one copy of these drivers. The procedure for extracting the drivers from the diskettes and a list of supplied drivers has been described previously.

Modification of CONFIG.SYS File

The drivers must be referenced in your CONFIG.SYS file. The MENUFDA program assumes that they are loaded as "transient" drivers - they are only loaded when HECDSS - DSPLAY is running. At the termination of DSPLAY, the drivers are removed from memory. Typical entries in the CONFIG.SYS file would look like the following:

```
BUFFERS = 25
FILES = 20
device = C:\DOS\ANSI.SYS
device = C:\GSS\IBMEGA.SYS
device = C:\GSS\EPSONX.SYS
device = C:\GSS\GSSCGI.SYS /T
```

The driver "GSSCGI.SYS" must be the last driver in the list. The "/T" option indicates that the drivers are transient. The above CONFIG.SYS file indicates that the user has an Enhanced Graphics Adapter (EGA), and an Epson printer. The user may alternatively specify a pen plotter as the output device.

DSPLAY normally assumes the graphic output goes to the screen. To activate an alternate device, the user must enter the DEV command while executing DSPLAY as follows:

Device	Command
Plotter	DEV,PLOTTER
Mouse	DEV,MOUSE,ON
Printer	DEV,PRINTER

DSPLAY utilizes the mouse as an alternative to the cursor keys to window a plot. For example, after DSPLAY projects a plot on the monitor, the user may window the plot by entering the character "W" followed by

pressing the <Enter> key. If the mouse has been activated, the user may define a new plot window by moving the mouse and pressing the left button, once for the lower left corner and once for the upper right corner of the new plot.

For example, the following commands may be entered on the keyboard while executing DSPLAY:

```
DEV,MOUSE,ON
DEV,PLOTTER
PA,5
SHADE,ON
PLOT
```

These commands activate the mouse, send graphic output to the plotter, retrieve data for pathname number 5, turn the shading on, and plot the data.

File Assignments

```
  UNIT      KEYWORD         *ABREV     **MAX   DEFAULT
    5       INPUT           I          30      CON
    6       OUTPUT          O          30      CON
   NOP      DSSFILE         D          30
   NOP      SCNFILE         S          30      GENSCN
    9       TAPE9           T          30      SCRATCH.009
    7       TABFILE         TAB        30      SCRATCH.007
   30       SCRAT           SCR        30      SCRATCH.008
   NOP      LOGFILE         L          30      SCRATCH.001
   39       SCRAT2          SCRAT2     30      SCRATCH.006
   NOP      FUNFILE         F          30      GENFUN
   NOP      MACFILE         M          30      DSPMAC
   NOP      MENFILE         ME         30      GENMEN
   NOP      HELPFILE        H          30      D:\HECEXE\SUP\DSPLAY.HLP

  * ABREV - SHORTEST ABBREVIATION ALLOWED FOR KEYWORD
  ** MAX - MAXIMUM # OF CHARACTERS FOR FILENAME (OR STRING)
Stop - Program terminated.
```

HEC-2 POST-PROCESSOR FOR FLOOD DAMAGE COMPUTATIONS (FDA2PO)

Program Purpose

The FDA2PO program post-processes computed results from HEC-2. It allows you to store discharge-elevation functions in an HECDSS data file and/or compute reference flood elevations for each structure. This method of storing discharge-elevation functions is an alternative to storing them directly with HEC-2. The FDA2PO program allows you to select the cross-sections at which you desire to store the curves rather than storing curves for all sections as is currently done by HEC-2 in the Harris version. The computation of the reference flood elevations requires that you supply a SID structure file containing "SL", "SD", and "SO" records and a SID input data file containing the reach identification records "DR".

The FDA2PO program processes results from either "TAPE95" or "TAPE96" output from a HEC-2 execution. The "TAPE95" file is a binary disk file to which HEC-2 writes computed results. It is a "binary" or "unformatted" file (not readable using the DOS "TYPE" command). It must be created with one of the more recent versions of the HEC-2 program and not older versions so that it will be compatible (and readable) by the FDA2PO program. The "TAPE96" file is the archive output file from HEC-2. It is written in an ASCII (or readable) format. This file can be created on another computer system (such as the Harris) and downloaded to the personal computer where the FDA2PO program can process it and store discharge-elevation functions and structure reference elevations in an HECDSS file on the personal computer. It is far more efficient to use the "TAPE95" file - it requires about fifty percent less processing time. However, program versions of the HEC-2 and FDA2PO must match and you can not look at the file using the DOS command "TYPE".

File Assignments

If you use the menu program to execute the programs, you need not worry about these key words. However, if you execute on the Harris or don't use the menu program, you need to know these key words. To determine the current definition, enter the command:

FDA2PO ?

The resulting output should look similar to the following:

```
Post-Process HEC-2 for ref. flood - dated March 1, 1990
   UNIT      KEYWORD          *ABREV     **MAX   DEFAULT
      5      IN               I           64     CON
      6      OUT              O           64     CON
    NOP      F95              F           64     SCRATCH.032
    NOP      F96              F96         64     SCRATCH.001
    NOP      DR               D           64     SCRATCH.002
    NOP      SIN              S           64     SCRATCH.003
    NOP      SOUT             SO          64     SCRATCH.004
    NOP      DSS              DS          64     SCRATCH.031
     30      SCRATCH          SC          64     SCRATCH.005
    NOP      FUNFILE          FU          64     FDA2PO.FUN
    NOP      MACFILE          M           64     FDA2PO.MAC

   * ABREV - SHORTEST ABBREVIATION ALLOWED FOR KEYWORD
   ** MAX - MAXIMUM # OF CHARACTERS FOR FILENAME (OR STRING)
Stop - Program terminated.
```

The user should enter filenames for the key words as follows:

Keyword	Description
F95 or F96	File which contains the results from HEC-2.
DR	File contains input data for the SID program including the DR records.
SIN	File contains the original structure records (SL, SD, and SO) for SID.
SOUT	File will contain the same structure records as the SIN file after they are modified with the computed reference flood elevation in field SL.5 and the translated first floor elevation in field SO.10.
DSS	File is the HECDSS data file to which discharge-elevation functions are written.

Reference Flood Calculation

To compute the reference flood elevations, you must have SID input data containing the DR reach record(s) and the structure records SL, SD, and SO. You must also have the computed results from HEC-2 written on either "TAPE95" or "TAPE96" and one of the profiles calculated by HEC-2 must be acceptable as the reference flood. The structure records and the DR records may exist in the same file but you will have to specify that same file name for both the DR file and the input structure file. Field 2 of the DR record will be over written by the calculated reference flood elevation at the index location. The structure data must contain SO records with the river mile entered in field nine. The FDA2PO program will use the reference flood water surface profile to:

(1) calculate the structure transformed first floor elevation after conceptually moving it to the index location and writing that elevation in field ten of the SO record.

(2) calculate the reference flood elevation at the structure by interpolating the profile at the river mile entered by the user in field nine of the SO record. The FDA2PO program assumes that the cross-section number entered in field one of the HEC-2 input data file is expressed in river miles and it uses it for interpolation of the reference flood elevation. The calculated elevation is written in field five of the SL record. The FDA2PO program writes all of the records to a new file to allow the user to compare the modified records with the original records.

(3) calculate the reference flood elevation at the index location by interpolating the profile at the river mile associated with the cross-section that the user defines as the index location when prompted by the FDA2PO program. The FDA2PO program allows the user to redefine the river mile associated with the index location. This is desirable if none of the sections coincide with the index location. The calculated elevation is written in field two of the DR records and will overwrite any existing value.

Discharge-Elevation Function Calculation

To store discharge-elevation function(s) in an HECDSS data file, you must have SID input data containing the structure records SL, SD, and SO. You must also have the computed results from HEC-2 written on either "TAPE95" or "TAPE96". The HEC-2 results must be for several profiles of increasing discharge spanning the range of desired exceedance frequencies. The FDA2PO program prompts the user to identify the damage index locations by cross-section index number. For example, if there are 50 cross-sections, the user might identify cross-section 14 as the section coinciding with the damage index location. The user may identify the cross-section using the river mile (which is defined in field one of the X1 record of the HEC-2 input) by entering the code S={river mile}. For example, if cross-section 14 is at river mile 56.78 and it is the index location, the user may identify it by entering "S=56.78". The FDA2PO program uses the structure data to determine the number of reaches for which discharge-elevation functions must be defined. If the HEC-2 results span more damage reaches than those defined in the SID structure file, the user needs to run FDA2PO several times, each time specifying a new structure file.

Before storing the discharge-elevation functions in the HECDSS data file, FDA2PO prompts the user to define the pathname parts A, E, and F. FDA2PO utilizes the six character reach identification from the SL records as part B of the pathname. One record will be written to the HECDSS data file for each reach. Each record contains one discharge-elevation function.

Example Execution of FDA2PO

The following pages illustrate a simple execution of the FDA2PO program. The data consists of the two structures and the HEC-2 geometric data shown in Training Document 21 (Computer Program Document 59). The reference flood is the sixth profile as computed by HEC-2. The damage index location coincides with river mile 49.0 or cross-section 4. Both the discharge-elevation function and the flood reference elevations are calculated. The program output and the user input are in normal font whereas the explanatory messages are in italics.

{Two files are shown below. The first file contains the DR record for RCH 1. The FDA2PO program modifies the DR record by calculating the reference flood elevation at the damage index location and storing it in field two (columns 9 through 16). The second file contains the SID structure records. The FDA2PO program will modify the SL records by calculating the reference flood elevations at each structure and storing it in field five (columns 33 through 40). It will also modify the SO record by calculating the structure first floor elevation after it has been transposed to the index location.}

```
T1      SILVER CREEK
T2
T3
J1     0       0       0              0       0              0       0
J2     4       2       1       1      1       1      18      1       2
ZW A=SILVER CREEK     F=BASE
DC       RESDNTL                RESIDENTIAL STRUCTURE AND CONTENTS
DC       COMERCL                COMMERCIAL STRUCTURE AND CONTENTS
DR RCH 1                                    3462     0.5
DT      DAMAGE REACH 1 FOR RIVERTON
ES
```

```
SL RCH 1    R001                          3463.8              0          1
SD RCH 1    R001 RESDNTLRS1  130RS2  -50
SO RCH 1    R001                                                  48.965
SL RCH 1    C001                          3462.4                        1
SD RCH 1    C001 COMERCLCM1   60CM2  250
SO RCH 1    C001                                                  48.988
```

{The following is the output from FDA2PO as it processes HEC-2 output which has been stored on "TAPE95". Like this paragraph, explanations of the output not written by FDA2PO appear within brackets and in italics.}

```
Number of sections from File95 header:     5.

Process profile  1.
Process profile  2.
```

```
Process profile  3.
Process profile  4.
Process profile  5.
Process profile  6.
Process profile  7.
Process profile  8.
Process profile  9.
Process profile 10.
Process profile 11.
Process profile 12.
Process profile 13.
Process profile 14.
```

{The following output displays the computed water surface elevations. In this case there are 14 profiles. The water surface elevation for the tenth profile is located in the second line below the column titled "Profile 5". The "Cum dist." is simply the cumulative distance (in feet) of each cross-section from the first section. The "Section no." is simply the river mile entered in field one of the X1 record in the HEC-2 input data file.}

```
There were 14 profiles,   5 sections, and 0 tributaries.
--------------------------------------------------------------------------------

 Section no.   Cum dist. Profile 1 Profile 2 Profile 3 Profile 4 Profile 5
      48.300          0.   3436.67   3439.58   3441.47   3442.85   3444.04
                           3445.05   3445.86   3446.61   3447.30   3447.96
                           3449.17   3451.32   3453.22   3457.32
      48.500       1056.   3442.94   3445.25   3446.76   3447.99   3449.02
                           3449.88   3450.63   3451.34   3452.00   3452.54
                           3453.85   3456.05   3458.04   3462.45
      48.800       2640.   3451.82   3453.73   3454.78   3455.35   3455.63
                           3456.56   3457.31   3458.26   3460.15   3461.09
                           3462.58   3463.65   3464.30   3466.41
      49.000       3696.   3459.69   3461.93   3463.44   3464.65   3465.65
                           3466.39   3467.12   3467.76   3467.97   3468.30
                           3468.82   3470.25   3471.60   3473.97
      49.500       6202.   3472.89   3474.98   3476.02   3476.60   3476.85
                           3477.16   3477.29   3477.59   3478.28   3478.87
                           3479.99   3481.91   3483.52   3486.76

 Do you want to store rating curves in a DSS data file?
(y/n):  Y
```

{User responds by entering "y" to indicate that discharge-elevation rating curves will be stored in an HECDSS data file. FDA2PO recognizes either lower or upper case letters.}

Do you want to compute reference flood elevations?
(y/n): **Y**

{User responds by entering "y" to indicate that reference flood elevations will be computed at each structure and at the index locations.}

```
Note, file SILVER.I already exists!
Do you want to overwrite it? (y/n)  y
```

{FDA2PO displays this message whenever the file to which the modified structure data is written already exists. This allows the user to verify that existing data will be overwritten.}

```
There are   1 reach(es) in the structure file:
   Index   I.D.   Index   I.D.   Index   I.D.   Index   I.D.   Index   I.D.
-------------------------------------------------------------------------------
       1  RCH 1
```

{FDA2PO displays this message after it has read all of the structure data contained in the SID input structure file.}

```
Eliminate any cross-sections? (y/n)  n
```

{FDA2PO allows the user to eliminate any cross-sections from the reference flood interpolation procedure. For this example, none of the sections are eliminated.}

```
For each damage reach from SID,  you must identify the
following:
(1)   The cross-section which corresponds to the index
      location.
(2)   The index number of the profile which will be used
      for the reference flood.
(3)   An edited river mile for the index location.

To eliminate a damage reach from consideration, enter a "d"
when prompted for the section number.
To get a list of cross-sections, enter "L" when prompted
for the section number.

 Damage reach  RCH 1,
Identify the cross-section at the index location (1-5)>  L
```

{The user has entered the character "L" to obtain a listing of all of the HEC-2 cross-sections. Two numbers appear for each cross-section: (1) The first number is the integer index which ranges from one through the number of

sections, and (2) The second number is the river mile associated with that section as defined in field one of the HEC-2 X1 record.}

```
                    5 Cross-sections
 ------------------------------------------------------------------------
   IDX   Section  IDX   Section  IDX   Section  IDX   Section  IDX   Section
 ------------------------------------------------------------------------
     1    48.300    2    48.500    3    48.800    4    49.000    5    49.500

 Damage reach  RCH 1,
 Identify the cross-section at the index location (1-5)>  4
```

{The user has defined cross-section four (river mile 49.000) as the damage index location. This means that an discharge-elevation rating curve will be stored in the HECDSS data file for this location and that a DR record should exist in the SID input data file for "RCH 1".}

```
 Damage reach  RCH 1,
 Identify the profile to use as the reference flood (1-14)>  6
```

{The user has defined profile six as the reference flood water surface profile. FDA2PO prompts the user with "(1-14)" to indicate that there are fourteen possible profiles as computed by HEC-2. This profile will be used to compute reference flood elevations at all structures and at the index location for this reach.}

```
 Damage reach  RCH 1.  Redefine the index location river mile
 (or press Enter to retain the current definition).

 RCH 1(49.000) >  <Enter> key pressed
```

{The user has pressed the <Enter> key to indicate that the river mile 49.000 will be used for the index point location for reach one.}

```
    -----DSS---ZOPEN; Existing File Opened - Unit:  71  File: SILVER.DSS

 Enter one of the following:
  (1)  The pathname part(s) in the format:
           A=pathname part A, E=pathname part E, F=pathname part F
  (2)  The pathname part when prompted.
  (3)  The command "EXIT" or press the "Enter" key to store
       the rating curves in the HECDSS data file.
  (4)  A "?" go get this message.
```

```
 Study name - pathname part A ().
 Data year - pathname part E ().
 Alternative or plan - pathname part F ().

Study name - part A - () > SILVER CREEK

 Study name - pathname part A (SILVER CREEK).
 Data year - pathname part E ().
 Alternative or plan - pathname part F ().

Data year - part E - () > <Enter> key pressed

 Study name - pathname part A (SILVER CREEK).
 Data year - pathname part E ().
 Alternative or plan - pathname part F ().

Alternative or plan - part F () > BASE

 Study name - pathname part A (SILVER CREEK).
 Data year - pathname part E ().
 Alternative or plan - pathname part F (BASE).

Store rating curves and exit? (y/n) > Y

-----DSS---ZWRITE Unit  71; Vers.    5:  /SILVER CREEK/RCH 1/ELEV-FLOW///BASE/
      -----DSS---ZCLOSE Unit: 71
                Number of Records:     12
                File Size:      9.7  Kbytes
                Percent Inactive:   .00
```

{In the above section, the FDA2PO program opens the HECDSS data file and prompts the user for the pathname parts A, E, and F. The user did not enter part E. A blank part is defined by simply pressing the <Enter> key when prompted by FDA2PO for a pathname part. The final response of "y" triggered the storage of all (in this case one) discharge-elevation rating curves in the HECDSS data file as indicated below.}

```
 -----DSS---ZWRITE Unit  71; Vers.    5:  /SILVER CREEK/RCH
1/ELEV-FLOW///BASE/
    -----DSS---ZCLOSE Unit: 71
                Number of Records:     13
                File Size:     10.5  Kbytes
                Percent Inactive:  1.22
```

{The following is a list of the original file containing the SID DR record after FDA2PO has modified the reference flood elevation.}

```
T1      SILVER CREEK
T2
T3
J1     0       0       0              0       0              0       0
J2     4       2       1       1      1       1      18      1       2
ZW SILVER CREEK  BASE
DC       RESDNTL               RESIDENTIAL STRUCTURE AND CONTENTS
DC       COMERCL               COMMERCIAL STRUCTURE AND CONTENTS
DR RCH 1 3466.39                                3462     0.5
DT      DAMAGE REACH 1 FOR RIVERTON
ES
```

{The following is a list of the output SID structure file containing the modified records including the structure reference flood elevations and the transformed first floor elevations.}

```
SL RCH 1    R001                3464.67  3463.8              0         1
SD RCH 1    R001 RESDNTLRS1  130RS2  -50
SO RCH 1    R001                                                 48.965  3465.52
SL RCH 1    C001                3465.80  3462.4                        1
SD RCH 1    C001 COMERCLCM1   60CM2  250
SO RCH 1    C001                                                 48.988  3462.99
```

APPENDIX B: REQUIRED FILE ASSIGNMENTS TO TEST SAMPLE DATA SETS FROM USER'S MANUALS

BAT File To Execute Sample Data Files

The following is a list of the file "GOTEST.BAT" which is included with the sample data set for "Test Data". The individual computer program user's manuals illustrate the application of this data. The ".BAT" file "GOTEST.BAT" allows you to process all of the supplied input data without using MENUFDA.

```
rem
rem  DAMCAL Test Data
rem  ------------------------------------------------------------------------
DAMCAL I=SAMPLE1.DC O=SAMPLE1.DCO D=TCREEK.GDB DSS=FDA.DSS
DAMCAL I=SAMPLE2.DC O=SAMPLE2.DCO D=TCREEK.GDB DSS=FDA.DSS
DAMCAL I=SAMPLE3.DC O=SAMPLE3.DCO D=TCREEK.GDB DSS=FDA.DSS
DAMCAL I=SAMPLE4.DC O=SAMPLE4.DCO D=TCREEK.GDB DSS=FDA.DSS
rem
rem  FDA2PO Test Data
rem  ------------------------------------------------------------------------
HEC2 INPUT=COOPER1.2 OUTPUT=COOPER1.2O TAPE95=COOPER1.295 TAPE96=COOPER1.296
FDA2PO I=COOPER1.2P O=COOPER1.2PO F95=COOPER1.295 DR=COOPER1.S SI=COOPER.I SO=COOPERM.I
DS=FDA.DSS
rem
HEC2 INPUT=COOPER5.2 OUTPUT=COOPER5.2O TAPE95=COOPER5.295 TAPE96=COOPER5.296
FDA2PO I=COOPER5.2P O=COOPER5.2PO F95=COOPER5.295 DR=COOPER1.S SI=COOPER.I SO=COOPERM.I
DS=FDA.DSS
rem
HEC2 INPUT=SILVER1.2 OUTPUT=SILVER1.2O TAPE95=SILVER1.295 TAPE96=SILVER1.296
FDA2PO I=SILVER1.2P O=SILVER1.2PO F95=SILVER1.295 DR=SILVER1.S SI=SILVER.I SO=SILVERM.I DS=FDA.DSS
rem
HEC2 INPUT=SILVER5.2 OUTPUT=SILVER5.2O TAPE95=SILVER5.295 TAPE96=SILVER5.296
FDA2PO I=SILVER5.2P O=SILVER5.2PO F95=SILVER5.295 DR=SILVER1.S SI=SILVER.I SO=SILVERM.I DS=FDA.DSS
rem
rem  SIDEDT Test Data
rem  ------------------------------------------------------------------------
SIDEDT I=SAMPLE1.SE O=SAMPLE1.SEO D=SAMPLE1A.I M=SAMPLE1B.I DO=SAMPLE1C.I
SIDEDT I=SAMPLE2.SE O=SAMPLE2.SEO D=SAMPLE2A.I U=SAMPLE2.SEU DO=SAMPLE2B.I
SIDEDT I=SAMPLE3.SE O=SAMPLE3.SEO D=SAMPLE3A.I DO=SAMPLE3B.I
SIDEDT I=SAMPLE4.SE O=SAMPLE4.SEO D=SAMPLE4A.F M=SAMPLE4B.F DO=SAMPLE4C.F
SIDEDT I=SAMPLE5.SE O=SAMPLE5.SEO D=SAMPLE5.F DF=SAMPLE5.DF R=SAMPLE5.RDF
rem
rem  SID Test Data
rem  ------------------------------------------------------------------------
SID I=SAMPLE1.S O=SAMPLE1.SO
SID I=SAMPLE2.S O=SAMPLE2.SO
SID I=SAMPLE3.S O=SAMPLE3.SO
SID I=SAMPLE4.S O=SAMPLE4.SO
SID I=SAMPLE5.S O=SAMPLE5.SO DF=SAMPLE5.DF R=SAMPLE5.RDF
SID I=SAMPLE6A.S O=SAMPLE6A.SO DS=FDA.DSS
SID I=SAMPLE6B.S O=SAMPLE6B.SO DS=FDA.DSS
rem
rem  EAD Test Data
rem  ------------------------------------------------------------------------
EAD I=SAMPLE1.E O=SAMPLE1.EO
EAD I=SAMPLE2.E O=SAMPLE2.EO
EAD I=SAMPLE3.E O=SAMPLE3.EO DSS=FDA.DSS
EAD I=SAMPLE4.E O=SAMPLE4.EO
```

DAMCAL Sample Data Files

Test 1

Table 4: DAMCAL Test 1 Files

Data File Identification	Filename
Input Data...	SAMPLE1.DC
Output Results...	SAMPLE1.DCO
HECDSS file...	FDA.DSS
Grid Cell Data Bank...	TCREEK.GDB
Single Event Damage...	(none)

Test 2

Table 5: DAMCAL Test 2 Files

Data File Identification	Filename
Input Data...	SAMPLE2.DC
Output Results...	SAMPLE2.DCO
HECDSS file...	FDA.DSS
Grid Cell Data Bank...	TCREEK.GDB
Single Event Damage...	(none)

Test 3

Table 6: DAMCAL Test 3 Files

Data File Identification	Filename
Input Data...	SAMPLE3.DC
Output Results...	SAMPLE3.DCO
HECDSS file...	FDA.DSS
Grid Cell Data Bank...	TCREEK.GDB
Single Event Damage...	(none)

Test 4

Table 7: DAMCAL Test 4 Files

Data File Identification	Filename
Input Data...	SAMPLE4.DC
Output Results...	SAMPLE4.DCO
HECDSS file...	FDA.DSS
Grid Cell Data Bank...	TCREEK.GDB
Single Event Damage...	(none)

EAD Sample Data Files

Test 1

Table 8: EAD Test 1 Files

Data File Identification	Filename
Input Data...	SAMPLE1.E
Output Results...	SAMPLE1.EO
HECDSS file...	(none)

Test 2

Table 9: EAD Test 2 Files

Data File Identification	Filename
Input Data...	SAMPLE2.E
Output Results...	SAMPLE2.EO
HECDSS file...	(none)

Test 3

Table 10: EAD Test 3 Files

Data File Identification	Filename
Input Data...	SAMPLE3.E
Output Results...	SAMPLE3.EO
HECDSS file...	FDA.DSS

Before running EAD Test 3, you must first run SID Tests 6A and 6B. These SID jobs store elevation-aggregated damage matrices in the DSS data file for two plans - base and floodproofing.

Test 4

Table 11: EAD Test 4 Files

Data File Identification	Filename
Input Data...	SAMPLE4.E
Output Results...	SAMPLE4.EO
HECDSS file...	(none)

SID Sample Data Files

Test 1

Table 12: SID Test 1 Files

Data File Identification	Filename
Input Data...	SAMPLE1.S
Output Results...	SAMPLE1.SO
HECDSS file...	(none)
Structure file...	(none)
Damage function file...	(none)
DF records for Random damage function file...	(none)
Random damage function file...	(none)

Test 2

Table 13: SID Test 2 Files

Data File Identification	Filename
Input Data...	SAMPLE2.S
Output Results...	SAMPLE2.SO
HECDSS file...	(none)
Structure file...	(none)
Damage function file...	(none)
DF records for Random damage function file...	(none)
Random damage function file...	(none)

Test 3

Table 14: SID Test 3 Files

Data File Identification	Filename
Input Data...	SAMPLE3.S
Output Results...	SAMPLE3.SO
HECDSS file...	(none)
Structure file...	(none)
Damage function file...	(none)
DF records for Random damage function file...	(none)
Random damage function file...	(none)

Test 4

Table 15: SID Test 4 Files

Data File Identification	Filename
Input Data...	SAMPLE4.S
Output Results...	SAMPLE4.SO
HECDSS file...	(none)
Structure file...	(none)
Damage function file...	(none)
DF records for Random damage function file...	(none)
Random damage function file...	(none)

Test 5

Table 16: SID Test 5 Files

Data File Identification	Filename
Input Data...	SAMPLE5.S
Output Results...	SAMPLE5.SO
HECDSS file...	(none)
Structure file...	(none)
Damage function file...	(none)
DF records for Random damage function file...	SAMPLE5.DF
Random damage function file...	SAMPLE5.RDF

Before running SID Test 5, you must first run SIDEDT Test 5. The SIDEDT Test 5 creates the random damage function file SAMPLE5.RDF and the file which contains the "DF" records, SAMPLE5.DF.

Test 6B

Table 17: SID Test 6A Files

Data File Identification	Filename
Input Data...	SAMPLE6A.S
Output Results...	SAMPLE6A.SO
HECDSS file...	FDA.DSS
Structure file...	(none)
Damage function file...	(none)
DF records for Random damage function file...	(none)
Random damage function file...	(none)

Test 6A

Table 18: SID Test 6B Files

Data File Identification	Filename
Input Data...	SAMPLE6B.S
Output Results...	SAMPLE6B.SO
HECDSS file...	FDA.DSS
Structure file...	(none)
Damage function file...	(none)
DF records for Random damage function file...	(none)
Random damage function file...	(none)

SIDEDT Sample Data Files

Test 1

Table 19: SIDEDT Test 1 Files

Data File Identification	Filename
User commands...	SAMPLE1.SE
Output Messages...	SAMPLE1.SEO
Input Data (structure or depth-damage)...	SAMPLE1A.I
Input Data for MERGE operation...	SAMPLE1B.I
Input Data for UPDATE operation...	(none)
Results from PULL, MODIFY, etc. operations...	SAMPLE1C.I
DF records for Random damage function file...	(none)
Random damage function file...	(none)

Test 2

Table 20: SIDEDT Test 2 Files

Data File Identification	Filename
User commands...	SAMPLE2.SE
Output Messages...	SAMPLE2.SEO
Input Data (structure or depth-damage)...	SAMPLE2A.I
Input Data for MERGE operation...	(none)
Input Data for UPDATE operation...	SAMPLE2.SEU
Results from PULL, MODIFY, etc. operations...	SAMPLE2B.I
DF records for Random damage function file...	(none)
Random damage function file...	(none)

Test 3

Table 21: SIDEDT Test 3 Files

Data File Identification	Filename
User commands...	SAMPLE3.SE
Output Messages...	SAMPLE3.SEO
Input Data (structure or depth-damage)...	SAMPLE3A.I
Input Data for MERGE operation...	(none)
Input Data for UPDATE operation...	(none)
Results from PULL, MODIFY, etc. operations...	SAMPLE3B.I
DF records for Random damage function file...	(none)
Random damage function file...	(none)

Test 4

Table 22: SIDEDT Test 4 Files

Data File Identification	Filename
User commands...	SAMPLE4.SE
Output Messages...	SAMPLE4.SEO
Input Data (structure or depth-damage)...	SAMPLE4A.F
Input Data for MERGE operation...	SAMPLE4B.F
Input Data for UPDATE operation...	(none)
Results from PULL, MODIFY, etc. operations...	SAMPLE4C.F
DF records for Random damage function file...	(none)
Random damage function file...	(none)

Test 5

Table 23: SIDEDT Test 5 Files

Data File Identification	Filename
User commands...	SAMPLE5.SE
Output Messages...	SAMPLE5.SEO
Input Data (structure or depth-damage)...	SAMPLE5.F
Input Data for MERGE operation...	(none)
Input Data for UPDATE operation...	(none)
Results from PULL, MODIFY, etc. operations...	(none)
DF records for Random damage function file...	SAMPLE5.DF
Random damage function file...	SAMPLE5.RDF

FDA2PO Sample Data Files

Test 1

Table 24: FDA2PO Test 1 Files

Data File Identification	Filename
User commands...	COOPER1.2P
Output Messages	COOPER1.2PO
File 95 (HEC-2 binary results)...	COOPER1.295
File 96 (HEC-2 archive results)...	(none)
SID input DR records...	COOPER1.S
Input SID structure file...	COOPER.I
Output SID structure file...	COOPERM.I
HECDSS file...	FDA.DSS
Function file...	(none)
Macro file...	(none)

Test 2

Table 25: FDA2PO Test 2 Files

Data File Identification	Filename
User commands...	COOPER5.2P
Output Messages	COOPER5.2PO
File 95 (HEC-2 binary results)...	COOPER5.295
File 96 (HEC-2 archive results)...	(none)
SID input DR records...	COOPER1.S
Input SID structure file...	COOPER.I
Output SID structure file...	COOPERM.I
HECDSS file...	FDA.DSS
Function file...	(none)
Macro file...	(none)

Test 3

Table 26: FDA2PO Test 3 Files

Data File Identification	Filename
User commands...	SILVER1.2P
Output Messages	SILVER1.2PO
File 95 (HEC-2 binary results)...	SILVER1.295
File 96 (HEC-2 archive results)...	(none)
SID input DR records...	SILVER.F
Input SID structure file...	SILVER1.S
Output SID structure file...	SILVERM.I
HECDSS file...	FDA.DSS
Function file ..	(none)
Macro file...	(none)

Test 4

Table 27: FDA2PO Test 4 Files

Data File Identification	Filename
User commands...	SILVER5.2P
Output Messages	SILVER5.2PO
File 95 (HEC-2 binary results)...	SILVER5.295
File 96 (HEC-2 archive results)...	(none)
SID input DR records...	SILVER5.S
Input SID structure file...	SILVER.I
Output SID structure file...	SILVERM.I
HECDSS file...	FDA.DSS
Function file...	(none)
Macro file...	(none)

APPENDIX C: REQUIRED FILE ASSIGNMENTS TO TEST TRAINING DOCUMENT 21 SAMPLE DATA

BAT File To Execute T.D. 21 Sample Data

The following is a list of the file "GOTD21.BAT" which is included with the sample data set for "Silver Creek". Training Document 21 (1) illustrates the application of this data. The ".BAT" file "GOTD21.BAT" allows you to process all of the supplied input data without using MENUFDA.

```
rem     Run HEC-1
rem     ----------
HEC1 I=P1&3.1 O=P1&3.1O DSS=SILVER1.DSS
rem
rem     Run HEC-5
rem     ----------
H5AEM I=P1&4.5 O=P1&4.5O DSSIN=SILVER1.DSS DSSOUT=SILVER5.DSS
H5BEM DSSOUT=SILVER5.DSS
rem
rem     Run DSSUTL
rem     ----------
DSSUTL I=SAMPLE1.U O=SAMPLE1.UO DSS=SILVER1.DSS WD=QF1TEST.UWD
DSSUTL I=SAMPLE2.U O=SAMPLE2.UO DSS=SILVER5.DSS WD=QF5TEST.UWD
DSSUTL I=SAMPLE3.U O=SAMPLE3.UO DSS=SILVER.DSS
rem
rem     Run HEC-2
rem     ----------
HEC2 I=P1.2 O=P1.2O TAPE95=P1.295 TAPE96=P1.296
HEC2 I=P5.2 O=P5.2O TAPE95=P5.295 TAPE96=P5.296
rem
rem     Run FDA2PO
rem     ----------
FDA2PO I=P1.2P O=P1.2PO F95=P1.295 DR=P1.S SIN=SILVERA.I SOUT=SILVER.I DSS=SILVER.DSS
FDA2PO I=P2.2P O=P2.2PO F95=P1.295 DR=P2.S SIN=SILVERA.I SOUT=SILVER.I
FDA2PO I=P5.2P O=P5.2PO F95=P5.295 DR=P1.S SIN=SILVERA.I DSS=SILVER.DSS
rem
rem     Run SID
rem     ----------
SID I=P1.S O=P1.SO DSS=SILVER.DSS S=SILVER.I D=SILVER.F
SID I=P2.S O=P2.SO DSS=SILVER.DSS S=SILVER.I D=SILVER.F
rem
rem     Run EAD
rem     ----------
EAD I=SILVER.E O=SILVER.EO DSS=SILVER.DSS
rem
```

HEC-1 Test Data Files

Test 1

Table 28: HEC-1 Test 1 Files

Data File Identification	Filename
Input Data...	P1&3.1
Output Results...	P1&3.1O
HECDSS file...	SILVER1.DSS

The Test 1 data set may be used with the new PC version of HEC-1 which is scheduled for release during calendar year 1990.

HEC-5 Test Data Files

Test 1

Table 29: HEC-5 Test 1 Files

Data File Identification	Filename
Input Data...	P1&4.5
Output Results...	P1&4.5O
HECDSS file...	(none)
Input HECDSS file...	SILVER1.DSS
Output HECDSS file...	SILVER5.DSS
Menu file...	(none)
QLOCINC file...	(none)
JSF file...	(none)

This data set may be used with the PC version of HEC-5. It is recommended that you use the extended memory version of HEC-5 which requires 4mb of memory.

DSSUTL Test Data Files

Test 1

Table 30: DSSUTL Test 1 Files

Data File Identification	Filename
User commands...	SAMPLE1.U
Output Messages...	SAMPLE1.UO
HECDSS file...	SILVER1.DSS
Function file...	(none)
Macro file...	(none)
Log file...	(none)
Tabulation file...	(none)
Write ASCII data file...	QF1TEST.UWD

This job copies frequency-flow curves written by HEC-1 from the HEC-1 DSS file to the master economics DSS file. You must run the HEC-1 test (P1&3.1) first before running this test.

Test 2

Table 31: DSSUTL Test 2 Files

Data File Identification	Filename
User commands...	SAMPLE2.U
Output Messages...	SAMPLE2.UO
HECDSS file...	SILVER5.DSS
Function file...	(none)
Macro file...	(none)
Log file...	(none)
Tabulation file...	(none)
Write ASCII data file...	QF5TEST.UWD

This job copies frequency-flow curves written by HEC-5 from the HEC-5 DSS file to the master economics DSS file. You must run the HEC-5 test (P1&4.5) first before running this test.

Test 3

Table 32: DSSUTL Test 3 Files

Data File Identification	Filename
User commands...	SAMPLE3.U
Output Messages...	SAMPLE3.UO
HECDSS file...	SILVER.DSS
Function file...	(none)
Macro file...	(none)
Log file...	(none)
Tabulation file...	(none)
Write ASCII data file...	(none)

This job reads frequency-flow curves from the file QFDATA and stores them in the master economics data file. They were written to that file using DSSUTL on the Harris. This job overwrites frequency curves written by the first two DSSUTL samples.

HEC-2 Test Data Files

Test 1

Table 33: HEC-2 Test 1 Files

Data File Identification	Filename
Input Data...	P1.2
Output Results...	P1.2O
File 95 (HEC-2 binary results)...	P1.295
File 96 (HEC-2 archive results)...	(none)
HECDSS file...	SILVER.DSS

Base plan. The file P1.295 is supplied. If you execute HEC-2, it will overwrite the existing results.

Test 2

Table 34: HEC-2 Test 2 Files

Data File Identification	Filename
Input Data...	P5.2
Output Results...	P5.2O
File 95 (HEC-2 binary results)...	P5.295
File 96 (HEC-2 archive results)...	(none)
HECDSS file...	SILVER.DSS

Channel improvement plan. The file P5.295 is supplied. If you execute HEC-2, it will overwrite the existing results.

FDA2PO Test Data Files

Test 1

Table 35: FDA2PO Test 1 Files

Data File Identification	Filename
User commands...	P1.2P
Output Messages	P1.2PO
File 95 (HEC-2 binary results)...	P1.295
File 96 (HEC-2 archive results)...	(none)
SID input DR records...	P1.S
Input SID structure file...	SILVERA.I
Output SID structure file...	SILVER.I
HECDSS file...	SILVER.DSS
Function file...	(none)
Macro file...	(none)

Base plan. The file P1.295 is supplied but can be rewritten using HEC-2. This sample stores discharge-elevation functions and computes the reference flood elevations.

Test 2

Table 36: FDA2PO Test 2 Files

Data File Identification	Filename
User commands...	P2.2P
Output Messages	P2.2PO
File 95 (HEC-2 binary results)...	P1.295
File 96 (HEC-2 archive results)...	(none)
SID input DR records...	P2.S
Input SID structure file...	SILVERA.I
Output SID structure file...	SILVER.I
HECDSS file...	(none)
Function file...	(none)
Macro file...	(none)

The file P1.295 is supplied but can be rewritten using HEC-2. This sample computes the reference flood elevations for the reach index locations. Alternatively, enter the same reference flood elevation from file P1.S in the file P2.S.

Test 3

Table 37: FDA2PO Test 3 Files

Data File Identification	Filename
User commands...	P5.2P
Output Messages	P5.2PO
File 95 (HEC-2 binary results)...	P5.295
File 96 (HEC-2 archive results)...	(none)
SID input DR records...	P1.S
Input SID structure file...	SILVERA.I
Output SID structure file...	(none)
HECDSS file...	SILVER.DSS
Function file...	(none)
Macro file...	(none)

Channel improvement plan. This job stores the discharge-elevation functions in the DSS file for the channel improvement condition.

SID Test Data Files

Test 1

Table 38: SID Test 1 Files

Data File Identification	Filename
Input Data...	P1.S
Output Results...	P1.SO
HECDSS file...	SILVER.DSS
Structure file...	SILVER.I
Damage function file...	SILVER.F
DF records for Random damage function file...	(none)
Random damage function file...	(none)

Base condition. You must first compute reference flood elevations by running Test 1 of the FDA2PO program.

Test 2

Table 39: SID Test 2 Files

Data File Identification	Filename
Input Data...	P2.S
Output Results...	P2.SO
HECDSS file...	SILVER.DSS
Structure file...	SILVER.I
Damage function file...	SILVER.F
DF records for Random damage function file...	(none)
Random damage function file...	(none)

Flood proofing plan. You must first compute reference flood elevations by running Tests 1 and 2 of the FDA2PO program.

EAD Test Data Files

Test 1

Table 40: EAD Test 1 Files

Data File Identification	Filename
Input Data...	SILVER.E
Output Results...	SILVER.EO
HECDSS file...	SILVER.DSS

Computes expected annual damage for all plans. You must first store intermediate results in the DSS file before running this test data set. This includes running:

(1) either HEC-1 and HEC-5 with DSSUTL Tests 1 and 2;

or DSSUTL Test 3.

(2) HEC-2 tests 1 and 2 (optional).

(3) FDA2PO tests 1, 2, and 3.

(4) SID tests 1 and 2.

APPENDIX D: DESCRIPTION OF SELECTED FILES

File Name	File Description
COED.DOC	Hardcopy documentation for COED. It corresponds to the COED user's manual.
COED.EXE	The executable code for the COED program.
COED.HLP	Online help and documentation for the COED editor.
COED.HPG	An index of the current COED help files that are available. This file is stored in the subdirectory \HECEXE\SUP. It may be modified by MENUFDA to reflect changes in "help program" information files.
COEDANY.HPG	Generic help file that sets up data justification in HEC format (columns 1&2 for record identification, one data field of 6 columns, and 9 data fields of 8 columns).
COEDDAMC.HPG	Help program file for DAMCAL. It is accessed by the COED editor.
COEDEAD.HPG	Help program file for EAD. It is accessed by the COED editor.
COEDSID.HPG	Help program file for SID. It is accessed by the COED editor.
COPYFDA.BAT	".BAT" file which may be used as an alternative to the installation program ("INSTALL.EXE"). The "COPYFDA.BAT" file does not modify the AUTOEXEC.BAT and CONFIG.SYS system files nor does it install the GSS Graphics Device Drivers.
COPYFDA.DOC	Documentation for the "COPYFDA.BAT" file.
DAMCAL.EXE	The DAMCAL program in executable form.
DRIVERS.EXE	The GSS Device Driver management program in executable form. It loads required device drivers in memory before executing DSPLAY and removes them from memory after terminating the DSPLAY program.
DSP.BAT	".BAT" file which may be used to execute the DSPLAY program outside of the MENUFDA program.
DSPLAY.EXE	The DSPLAY program in executable form.
DSPLAY.HLP	The online help information for the DSPLAY program.
DSSUTL.EXE	The DSSUTL program in executable form.
DSSUTL.HLP	The online help information for the DSSUTL program.
EAD.EXE	The EAD program in executable form.
FDA2PO.EXE	The FDA2PO program in executable form.

File Name	File Description
FDAMNU.EXE	The menu program for the FDA Package.
INSTALL.EXE	Installation program for the FDA Package.
INSTALL.FIG	Configuration file which is read by the Installation program for information defining the location of files on the distribution diskettes.
LIST.COM	Utility program which provides convenient screen displays of disk files.
LIST.DOC	Documentation for the LIST.COM program.
MENUFDA.BAT	The batch file which is used to execute the menu program for the FDA Package.
PIP.EXE	The PIP program in executable form.
PIP.HLP	The online help information for the PIP program.
PIP.MEN	The menu screens for the PIP program.
PKUNZIP.EXE	Program to extract data from a compressed (or "zipped") file. All compressed files have the extension ".ZIP". The program "PKZIP" is used to compress files.
PKZ101.EXE	This file contains all of the programs and documentation for the PKWARE software including PKUNZIP.EXE, PKZIP.EXE, and PKZIPFIX.EXE.
PKZIP.EXE	Program to store data in a compressed (or "zipped") file. All compressed files have the extension ".ZIP". The program "PKUNZIP" is used to extract data from a compressed file.
PKZIPFIX.EXE	Program which reconstructs corrupted ZIP files.
PROUT.EXE	Utility program which sends some computer program output files to the printer. It inserts DOS printer carriage control characters in files which are formatted for printing on mainframes.
SID.EXE	The SID program in executable form.
SIDEDT.EXE	The SIDEDT program in executable form.

APPENDIX E: LIST OF FILES ON 3½ INCH DISKETTE

Disk Volume Label	Disk File Name	Zipped File Name	Zipped File Size	Unzipped File Size	File Date	File Time
INS-FDA-90						
	COEDEXE.ZIP	COED.EXE	96,200	211,871	11-04-87	10:48
		COED.HLP	27,058	91,085	02-19-87	09:53
	COPYFDA.BAT		-	4,595	9-05-90	24:00
	COPYFDA.DOC		-	1,660	3-21-90	21:12
	FDAMENU.ZIP	FDAMNU.EXE	85,703	169,906	09-05-90	15:06
		MENUFDA.BAT	77	93	02-02-90	17:03
	INSTALL.EXE		-	252,518	9-07-90	15:43
	INSTALL.FIG		-	14,167	9-05-90	14:31
	PKUNZIP.EXE		-	22,022	10-01-89	1:02
	PKZIP.EXE		-	31,408	10-01-89	1:02
	PKZIPFIX.EXE		-	8,926	7-21-89	1:01
	UTIL.ZIP	DSSST6.EXE	119,469	242,844	08-20-90	12:00
		LIST.COM	6,321	8,191	09-04-90	07:45
		PROUT.EXE	17,018	24,553	08-03-88	11:05
FDA#1-SEP90						
	DAMCAL.ZIP	DAMCAL.EXE	96,628	196,708	08-30-90	12:31
	EAD.ZIP	EAD.EXE	137,460	281,038	08-30-90	15:34
	ECONHPG.ZIP	COED.HPG	134	349	08-29-89	10:14
		COEDANY.HPG	105	306	02-17-87	11:41
		COEDDAMC.HPG	9,822	43,670	09-05-89	16:33
		COEDEAD.HPG	14,046	58,072	03-19-90	16:47
		COEDSID.HPG	20,116	90,322	05-02-90	17:25
	FDA2PO.ZIP	FDA2PO.EXE	108,466	211,708	08-30-90	15:24
	PIP.ZIP	PIP.EXE	83,977	162,718	08-30-90	15:23
	PIPH.ZIP	PIP.HLP	3,740	14,064	04-04-90	09:15
		PIP.MEN	623	2,598	04-04-90	08:33
	SID.ZIP	SID.EXE	128,522	286,800	08-30-90	15:47
	SIDEDT.ZIP	SIDEDT.EXE	58,450	106,098	08-30-90	12:52
FDA#2-SEP90						
	DSPLAY.ZIP	DRIVERS.EXE	4,031	10,016	03-17-89	08:54

Disk Volume Label	Disk File Name	Zipped File Name	Zipped File Size	Unzipped File Size	File Date	File Time
		DSP.BAT	53	60	08-20-90	12:00
		DSPLAY.EXE	245,711	502,719	08-20-90	12:00
	DSPLAYH.ZIP	DSPLAY.HLP	17,211	60,029	08-20-90	12:00
	DSSUTL.ZIP	DSSUTL.EXE	222,832	462,109	08-20-90	12:00
	DSSUTLH.ZIP	DSSUTL.HLP	30,906	104,956	08-20-90	12:00
FDAD1-SEP90						
	TD21IN.ZIP	GOTD21.BAT	364	1,326	08-31-90	09:18
		P1&3.1	636	1,408	09-27-89	14:34
		P1&4.5	539	1,556	09-27-89	14:47
		P1.2	655	3,252	01-07-88	12:19
		P1.295	9,809	24,566	08-31-90	09:18
		P1.2P	39	47	09-27-89	11:51
		P1.S	228	902	08-31-90	09:19
		P2.2P	16	20	09-27-89	12:09
		P2.S	252	1,066	08-31-90	09:19
		P5.2	680	3,299	01-15-88	09:30
		P5.295	8,482	24,566	08-31-90	09:18
		P5.2P	44	46	09-27-89	12:16
		QFDATA	686	1,405	02-12-88	17:02
		SAMPLE1.U	53	56	09-27-89	16:02
		SAMPLE2.U	53	56	09-27-89	16:02
		SAMPLE3.U	22	22	02-09-88	10:19
		SILVER.DSC	379	794	08-31-90	09:17
		SILVER.DSS	3,464	18,428	08-31-90	09:22
		SILVER.E	407	875	02-03-88	17:21
		SILVER.F	130	424	12-14-87	16:49
		SILVER.I	168	492	08-31-90	09:19
		SILVERA.I	146	384	06-03-88	10:50
	TD21OUT.ZIP	P1&3.1O	5,022	27,380	08-31-90	09:04
		P1&4.5O	5,497	54,503	08-31-90	09:11
		P1.2O	7,179	42,387	08-31-90	09:18
		P1.2PO	1,599	4,377	08-31-90	09:19
		P1.SO	4,369	24,487	08-31-90	09:21
		P2.2PO	1,169	2,964	08-31-90	09:19

Disk Volume Label	Disk File Name	Zipped File Name	Zipped File Size	Unzipped File Size	File Date	File Time
		P2.SO	4,630	26,995	08-31-90	09:21
		P5.2O	6,458	38,017	08-31-90	09:18
		P5.2PO	1,486	4,053	08-31-90	09:19
		QF1TEST.UWD	427	809	05-02-90	17:55
		QF5TEST.UWD	469	611	05-02-90	17:55
		SAMPLE1.UO	1,127	4,568	08-31-90	09:17
		SAMPLE2.UO	851	1,894	08-31-90	09:17
		SAMPLE5. O	773	1,609	08-31-90	09:17
		SILVER.EO	5,544	25,565	08-31-90	09:22
		SILVER1.DSC	729	4,487	08-31-90	09:17
		SILVER1.DSS	6,491	66,044	08-31-90	09:17
		SILVER5.DSC	409	937	08-31-90	09:17
		SILVER5.DSS	1,293	11,260	08-31-90	09:17
	TESTIN.ZIP	COOPER.I	1,420	10,068	05-17-89	14:07
		COOPER1.2	2,547	9,059	07-05-89	14:54
		COOPER1.295	27,740	59,566	08-30-90	15:36
		COOPER1.2P	51	68	03-14-90	11:57
		COOPER1.S	545	1,722	08-30-90	15:36
		COOPER5.2	2,592	9,344	03-24-88	11:10
		COOPER5.295	28,547	59,566	08-30-90	15:36
		COOPER5.2P	52	68	03-20-90	16:11
		FDA.DSS	7,121	52,220	08-30-90	15:50
		GODAMCAL.BAT	143	240	03-21-90	09:06
		GOEAD.BAT	174	278	04-27-90	14:12
		GOFDA2PO.BAT	215	737	04-13-90	15:35
		GOHEC1.BAT	43	44	08-31-90	09:02
		GOSID.BAT	217	465	03-20-90	16:44
		GOSIDEDT.BAT	157	366	10-13-89	15:21
		GOTEST.BAT	611	2,766	04-27-90	14:43
		SAMPLE1.DC	1,369	6,033	08-30-90	13:26
		SAMPLE1.E	823	1,871	08-30-90	15:42
		SAMPLE1.S	1,538	5,563	08-30-90	15:40
		SAMPLE1.SE	174	274	12-17-87	16:48
		SAMPLE1A.I	1,755	6,362	11-17-87	09:14

Disk Volume Label	Disk File Name	Zipped File Name	Zipped File Size	Unzipped File Size	File Date	File Time
		SAMPLE1B.I	701	2,159	11-17-87	09:14
		SAMPLE2.DC	1,363	6,059	08-30-90	13:27
		SAMPLE2.E	1,667	4,714	08-30-90	15:42
		SAMPLE2.S	1,667	5,868	08-30-90	15:40
		SAMPLE2.SE	261	467	09-27-89	10:57
		SAMPLE2.SEU	90	156	12-18-87	09:27
		SAMPLE2A.I	2,173	8,938	06-17-88	14:51
		SAMPLE3.DC	1,362	6,017	08-30-90	13:27
		SAMPLE3.E	464	849	08-30-90	15:43
		SAMPLE3.S	1,690	5,869	08-30-90	15:40
		SAMPLE3.SE	248	357	11-17-87	09:15
		SAMPLE3A.I	2,173	8,938	06-17-88	14:51
		SAMPLE4.DC	1,376	6,045	08-30-90	13:27
		SAMPLE4.E	474	987	08-30-90	15:43
		SAMPLE4.S	1,721	5,969	08-30-90	15:40
		SAMPLE4.SE	180	250	11-17-87	09:15
		SAMPLE4A.F	533	2,516	11-17-87	09:13
		SAMPLE4B.F	203	560	11-17-87	09:13
		SAMPLE5.F	786	3,306	03-20-90	16:46
		SAMPLE5.S	827	2,274	08-30-90	15:41
		SAMPLE5.SE	117	139	11-17-87	09:15
		SAMPLE6A.S	1,670	5,827	08-30-90	15:41
		SAMPLE6B.S	1,748	6,005	08-30-90	15:42
		SILVER.I	168	492	08-31-90	09:19
		SILVER1.2	655	3,252	01-07-88	12:19
		SILVER1.295	9,809	24,566	08-30-90	15:37
		SILVER1.2P	42	49	03-14-90	11:58
		SILVER1.S	226	902	08-30-90	15:37
		SILVER5.2	682	3,300	03-14-90	10:32
		SILVER5.295	8,482	24,566	08-30-90	15:37
		SILVER5.2P	48	54	03-20-90	16:17
		TCREEK.GDB	57,911	416,442	09-22-89	16:50
	TESTOUT.ZIP	COOPER1.2O	10,848	57,556	08-30-90	15:36
		COOPER1.2PO	2,060	6,702	08-30-90	15:36

Disk Volume Label	Disk File Name	Zipped File Name	Zipped File Size	Unzipped File Size	File Date	File Time
		COOPER5.2O	15,247	79,818	08-30-90	15:36
		COOPER5.2PO	2,071	6,726	08-30-90	15:36
		COOPERM.I	1,656	11,070	08-30-90	15:36
		FDA.DSS	7,121	52,220	08-30-90	15:50
		SAMPLE1.DCO	10,839	103,772	08-30-90	13:29
		SAMPLE1.EO	3,578	24,937	08-30-90	15:49
		SAMPLE1.SEO	1,499	8,701	08-30-90	14:07
		SAMPLE1.SO	15,205	117,040	08-30-90	15:48
		SAMPLE1C.I	2,173	8,938	08-30-90	14:07
		SAMPLE2.DCO	10,316	103,845	08-30-90	13:30
		SAMPLE2.EO	10,281	64,840	08-30-90	15:50
		SAMPLE2.SEO	1,530	7,987	08-30-90	14:07
		SAMPLE2.SO	17,738	136,551	08-30-90	15:48
		SAMPLE2B.I	2,247	8,938	08-30-90	14:07
		SAMPLE3.DCO	10,234	102,848	08-30-90	13:30
		SAMPLE3.EO	4,616	37,797	08-30-90	15:50
		SAMPLE3.SEO	1,351	4,838	08-30-90	14:07
		SAMPLE3.SO	14,386	116,594	08-30-90	15:48
		SAMPLE4.DCO	10,316	105,159	08-30-90	13:31
		SAMPLE4.EO	3,250	21,039	08-30-90	15:50
		SAMPLE4.SEO	824	3,618	08-30-90	14:07
		SAMPLE4.SO	14,726	120,949	08-30-90	15:48
		SAMPLE4C.F	605	3,444	08-30-90	14:07
		SAMPLE5.DF	136	1,230	08-30-90	15:48
		SAMPLE5.RDF	1,073	10,000	08-30-90	15:4[illegible]
		SAMPLE5.SEO	728	2,654	08-30-90	15:48
		SAMPLE5.SO	6,103	51,967	08-30-90	15:48
		SAMPLE6A.SO	15,915	121,902	08-30-90	15:50
		SAMPLE6B.SO	15,302	124,239	08-30-90	15:50
		SILVER1.2O	7,179	42,38[illegible]	08-30-90	15:37
		SILVER1.2PO	1,607	4,372	08-30-90	15:37
		SILVER5.2O	6,455	38,017	08-30-90	15:37
		SILVER5.2PO	1,605	4,390	08-30-90	15:37
		SILVERM.I	169	492	08-30-90	15:37

Disk Volume Label	Disk File Name	Zipped File Name	Zipped File Size	Unzipped File Size	File Date	File Time
FDA DOC 90						
	COED.DOC		-	118,769	3-02-87	16:17
	LIST.DOC		-	34,296	9-05-86	15:50
	PKZ101.EXE		-	131,517	7-21-89	1:01
GSS 90 #1						
	CGIPREP.ZIP	CGIPREP	2,783	8,920	05-01-89	10:49
	COMPAQ3.ZIP	COMPAQ3.SYS	20,776	32,056	07-11-87	12:09
	DRIVERS.ZIP	DRIVERS.EXE	5,095	10,016	03-17-89	08:54
	EPSONX.ZIP	EPSONX.SYS	23,202	40,588	05-22-89	16:25
	FONTDRV.ZIP	FONTDRV.SYS	6,716	11,616	02-20-89	16:57
	GSSCGI.ZIP	GSSCGI.SYS	25,058	37,284	02-14-89	11:41
	HERCBW.ZIP	HERCBW.SYS	23,526	37,224	05-04-88	19:34
	HERCINCO.ZIP	HERCINCO.SYS	25,341	40,748	05-04-88	19:34
	HIPLOTTR.ZIP	HIPLOTTR.SYS	13,949	28,280	03-24-89	16:17
	HIRESEGA.ZIP	HIRESEGA.SYS	27,607	42,760	09-20-88	14:56
	HPDJET.ZIP	HPDJET.SYS	27,907	52,652	05-22-89	23:39
	HPGLPLTR.ZIP	HPGLPLTR.SYS	17,075	33,988	05-02-89	01:07
	HPLASERP.ZIP	HPLASERP.SYS	24,822	47,192	05-24-89	15:24
	HPPLOT.ZIP	HPPLOT.SYS	15,203	31,388	05-02-89	01:08
	HREGA.ZIP	HREGA.SYS	27,621	43,012	04-03-89	11:10
	HRVGA.ZIP	HRVGA.SYS	26,770	41,744	12-15-88	15:28
	IBMAFH.ZIP	IBMAFH.SYS	32,388	56,864	05-25-89	15:17
	IBMAFL.ZIP	IBMAFL.SYS	30,801	51,688	05-25-89	16:00
	IBMBW.ZIP	IBMBW.SYS	22,719	34,620	05-04-88	19:34
	IBMCO.ZIP	IBMCO.SYS	24,161	37,720	05-04-88	19:34
	IBMEGA.ZIP	IBMEGA.SYS	27,051	42,076	09-20-88	17:11
	IBMVGA12.ZIP	IBMVGA12.SYS	26,747	41,828	09-20-88	17:30
	IHW12X16.ZIP	IHW12X16.FNT	2,502	8,804	04-10-89	16:26
	IHW12X24.ZIP	IHW12X24.FNT	2,142	13,140	01-16-89	09:43
	IHW12X48.ZIP	IHW12X48.FNT	2,628	26,148	02-15-89	09:19
	IHW12X8.ZIP	IHW12X8.FNT	1,388	4,468	01-16-89	09:25
	IHW18X24.ZIP	IHW18X24.FNT	2,648	26,148	01-16-89	09:54
	IHW24X24.ZIP	IHW24X24.FNT	4,927	26,148	04-12-89	08:08
	IHW6X16.ZIP	IHW6X16.FNT	1,770	8,804	01-16-89	09:21

Disk Volume Label	Disk File Name	Zipped File Name	Zipped File Size	Unzipped File Size	File Date	File Time
	IHW6X8.ZIP	IHW6X8.FNT	1,185	2,300	01-17-89	14:54
	INSTFONT.ZIP	INSTFONT.EXE	8,816	15,106	02-01-89	09:30
	META.ZIP	META.SYS	13,049	30,268	05-04-88	19:34
	MSMOUSE.ZIP	MSMOUSE.SYS	2,930	5,788	10-06-88	11:50
	PS2MOUSE.ZIP	PS2MOUSE.SYS	2,820	5,640	10-19-88	14:06
	T3100.ZIP	T3100.SYS	21,678	33,388	12-17-87	16:30
GSS 90 #2						
	ADAGE30.ZIP	ADAGE30.SYS	27,358	51,180	12-11-86	14:28
	CALCOMPA.ZIP	CALCOMPA.SYS	3,907	6,908	03-24-89	15:09
	CALCOMPB.ZIP	CALCOMPB.SYS	3,680	6,616	02-28-89	12:03
	CALPLOT.ZIP	CALPLOT.SYS	16,485	34,980	06-13-88	09:59
	CANL8II.ZIP	CANL8II.SYS	24,110	45,796	05-23-89	03:32
	CGCGI.ZIP	CGCGI.SYS	14,554	25,356	09-29-88	11:17
	CGI6300B.ZIP	CGI6300B.SYS	23,479	37,032	08-23-88	14:45
	CGI6300C.ZIP	CGI6300C.SYS	25,408	40,768	09-15-88	10:44
	CGIDGIS.ZIP	CGIDGIS.SYS	18,235	30,496	05-17-89	16:22
	CGIPOST.ZIP	CGIPOST.SYS	15,430	30,940	05-02-89	10:58
	CGISTUB.ZIP	CGISTUB.SYS	243	268	02-14-89	12:00
	CTOUCH.ZIP	CTOUCH.SYS	3,781	6,836	10-04-88	15:25
	DIAB150.ZIP	DIAB150.SYS	23,657	42,776	05-27-87	10:51
	DICONIXH.ZIP	DICONIXH.SYS	24,228	44,076	02-02-87	16:53
	DICONIXL.ZIP	DICONIXL.SYS	23,966	42,220	02-02-87	16:53
	EPEX1000.ZIP	EPEX1000.SYS	25,648	43,292	05-27-89	20:06
	EPEX800.ZIP	EPEX800.SYS	25,522	43,148	05-25-89	08:53
	EPLX800.ZIP	EPLX800.SYS	23,146	40,668	05-22-89	16:00
	EPSONLQ.ZIP	EPSONLQ.SYS	27,981	52,616	05-24-89	09:08
	EPSONLQC.ZIP	EPSONLQC.SYS	27,303	47,208	05-22-89	17:29
	HPPJ180.ZIP	HPPJ180.SYS	25,240	44,216	05-22-89	23:07
	HPPJ90.ZIP	HPPJ90.SYS	24,859	42,632	05-23-89	00:44
	IBMGIJOY.ZIP	IBMGIJOY.SYS	3,516	6,708	01-27-86	18:03
	IBMGPR.ZIP	IBMGPR.SYS	23,905	42,096	02-02-87	16:54
	IBMPRCOL.ZIP	IBMPRCOL.SYS	21,045	39,724	05-27-87	12:05
	IBMPRO.ZIP	IBMPRO.SYS	23,630	41,316	05-23-89	09:42
	IBMPROII.ZIP	IBMPROII.SYS	26,637	47,076	05-22-89	16:05

Disk Volume Label	Disk File Name	Zipped File Name	Zipped File Size	Unzipped File Size	File Date	File Time
GSS 90 #3						
	IBMQW2.ZIP	IBMQW2.SYS	26,684	47,184	05-23-89	00:16
	IBMQW3.ZIP	IBMQW3.SYS	24,752	44,888	05-26-87	07:56
	IBMVGA11.ZIP	IBMVGA11.SYS	23,691	36,460	05-04-88	19:34
	IBMVGA13.ZIP	IBMVGA13.SYS	23,523	38,400	08-17-88	17:02
	IBMXL24.ZIP	IBMXL24.SYS	27,945	52,564	05-23-89	00:55
	IS30.ZIP	IS30.SYS	4,345	12,848	03-17-86	14:15
	LASERJET.ZIP	LASERJET.SYS	27,100	49,072	02-16-89	01:59
	MOUSESYS.ZIP	MOUSESYS.SYS	3,362	6,256	02-28-89	12:18
	NECP5.ZIP	NECP5.SYS	27,942	52,548	05-24-89	10:46
	NECP5XL.ZIP	NECP5XL.SYS	27,249	47,128	05-22-89	21:31
	OKID290.ZIP	OKID290.SYS	26,277	44,424	05-23-89	02:21
	PS_COB.ZIP	PS_COB.FNT	1,386	3,013	04-01-89	12:47
	PS_COO.ZIP	PS_COO.FNT	1,535	3,013	04-01-89	12:47
	PS_HV.ZIP	PS_HV.FNT	1,648	3,013	04-01-89	12:51
	PS_HVB.ZIP	PS_HVB.FNT	1,626	3,013	04-01-89	12:48
	PS_HVO.ZIP	PS_HVO.FNT	1,688	3,013	04-01-89	12:49
	PS_TIB.ZIP	PS_TIB.FNT	1,654	3,013	04-01-89	12:50
	PS_TIL.ZIP	PS_TIL.FNT	1,723	3,013	04-01-89	12:49
	PS_TIR.ZIP	PS_TIR.FNT	1,613	3,013	04-01-89	12:50
	QUIETJET.ZIP	QUIETJET.SYS	23,939	43,972	02-03-87	09:06
	ROLAND.ZIP	ROLAND.SYS	11,817	23,800	07-28-87	22:10
	SUM1812.ZIP	SUM1812.SYS	3,403	6,316	04-04-89	17:50
	SUMMATB.ZIP	SUMMATB.SYS	5,221	11,112	03-06-89	08:14
	TEK4695.ZIP	TEK4695.SYS	23,658	42,808	05-27-87	12:12
	THINKJET.ZIP	THINKJET.SYS	25,765	46,716	05-23-89	13:17
	TOSHIBA.ZIP	TOSHIBA.SYS	27,362	52,576	05-23-89	17:15
	VERSATEC.ZIP	VERSATEC.SYS	25,011	51,652	07-11-87	11:56
	VISMOUSE.ZIP	VISMOUSE.SYS	3,305	6,208	10-03-88	16:22

APPENDIX F: LIST OF FILES ON 5¼ INCH DISKETTE

Disk Volume Label	Disk File Name	Zipped File Name	Zipped File Size	Unzipped File Size	File Date	File Time
INS-FDA-90						
	COPYFDA.BAT		-	5,749	9-05-90	24:00
	COPYFDA.DOC		-	1,660	3-21-90	21:12
	INSTALL.EXE		-	252,518	9-07-90	15:43
	INSTALL.FIG		-	14,445	9-05-90	14:27
	PKUNZIP.EXE		-	22,022	10-01-89	1:02
	PKZIP.EXE		-	31,408	10-01-89	1:02
	PKZIPFIX.EXE		-	8,926	7-21-89	1:01
FDA#1-SEP90						
	COEDEXE.ZIP	COED.EXE	96,200	211,871	11-04-87	10:48
		COED.HLP	27,058	91,085	02-19-87	09:53
	FDAMENU.ZIP	FDAMNU.EXE	85,703	169,906	09-05-90	15:06
		MENUFDA.BAT	77	93	02-02-90	17:03
	UTIL.ZIP	DSS5T6.EXE	119,469	242,844	08-20-90	12:00
		LIST.COM	6,321	8,191	09-04-90	07:45
		PROUT.EXE	17,018	24,553	08-03-88	11:05
FDA#2-SEP90						
	EAD.ZIP	EAD.EXE	137,460	281,038	08-30-90	15:34
	ECONHPG.ZIP	COED.HPG	134	349	08-29-89	10:14
		COEDANY.HPG	105	306	02-17-87	11:41
		COEDDAMC.HPG	9,822	43,670	09-05-89	16:33
		COEDEAD.HPG	14,046	58,072	03-19-90	16:47
		COEDSID.HPG	20,116	90,322	05-02-90	17:25
	SID.ZIP	SID.EXE	128,522	286,800	08-30-90	15:47
FDA#3-SEP90						
	DAMCAL.ZIP	DAMCAL.EXE	96,628	196,708	08-30-90	12:31
	FDA2PO.ZIP	FDA2PO.EXE	108,466	211,708	08-30-90	15:24
	PIP.ZIP	PIP.EXE	83,977	162,718	08-30-90	15:23
	PIPH.ZIP	PIP.HLP	3,740	14,064	04-04-90	09:15
		PIP.MEN	623	2,598	04-04-90	08:33
	SIDEDT.ZIP	SIDEDT.EXE	58,450	106,098	08-30-90	12:52

Disk Volume Label	Disk File Name	Zipped File Name	Zipped File Size	Unzipped File Size	File Date	File Time
FDA#4-SEP90						
	DSSUTL.ZIP	DSSUTL.EXE	222,832	462,109	08-20-90	12:00
	DSSUTLH.ZIP	DSSUTL.HLP	30,906	104,956	08-20-90	12:00
FDA#5-SEP90						
	DSPLAY.ZIP	DRIVERS.EXE	4,031	10,016	03-17-89	08:54
		DSP.BAT	53	60	08-20-90	12:00
		DSPLAY.EXE	245,711	502,719	08-20-90	12:00
	DSPLAYH.ZIP	DSPLAY.HLP	17,211	60,029	08-20-90	12:00
FDAD1-SEP90						
	TD21IN.ZIP	GOTD21.BAT	364	1,326	08-31-90	09:18
		P1&3.1	636	1,408	09-27-89	14:34
		P1&4.5	539	1,556	09-27-89	14:47
		P1.2	655	3,252	01-07-88	12:19
		P1.295	9,809	24,566	08-31-90	09:18
		P1.2P	39	47	09-27-89	11:51
		P1.S	228	902	08-31-90	09:19
		P2.2P	16	20	09-27-89	12:09
		P2.S	252	1,066	08-31-90	09:19
		P5.2	680	3,299	01-15-88	09:30
		P5.295	8,482	24,566	08-31-90	09:18
		P5.2P	44	46	09-27-89	12:16
		QFDATA	686	1,405	02-12-88	17:02
		SAMPLE1.U	53	56	09-27-89	16:02
		SAMPLE2.U	53	56	09-27-89	16:02
		SAMPLE3.U	22	22	02-09-88	10:19
		SILVER.DSC	379	794	08-31-90	09:17
		SILVER.DSS	3,464	18,428	08-31-90	09:22
		SILVER.E	407	875	02-03-88	17:21
		SILVER.F	130	424	12-14-87	16:49
		SILVER.I	168	492	08-31-90	09:19
		SILVERA.I	146	384	06-03-88	10:50
	TD21OUT.ZIP	P1&3.1O	5,022	27,380	08-31-90	09:04
		P1&4.5O	5,497	54,503	08-31-90	09:11
		P1.2O	7,179	42,387	08-31-90	09:18

Disk Volume Label	Disk File Name	Zipped File Name	Zipped File Size	Unzipped File Size	File Date	File Time
		P1.2PO	1,599	4,377	08-31-90	09:19
		P1.SO	4,369	24,487	08-31-90	09:21
		P2.2PO	1,169	2,964	08-31-90	09:19
		P2.SO	4,630	26,995	08-31-90	09:21
		P5.2O	6,458	38,017	08-31-90	09:18
		P5.2PO	1,486	4,053	08-31-90	09:19
		QF1TEST.UWD	427	809	05-02-90	17:55
		QF5TEST.UWD	469	611	05-02-90	17:55
		SAMPLE1.UO	1,127	4,568	08-31-90	09:17
		SAMPLE2.UO	851	1,894	08-31-90	09:17
		SAMPLE3.UO	773	1,609	08-31-90	09:17
		SILVER.EO	5,544	25,565	08-31-90	09:22
		SILVER1.DSC	729	4,487	08-31-90	09:17
		SILVER1.DSS	6,491	66,044	08-31-90	09:17
		SILVER5.DSC	409	937	08-31-90	09:17
		SILVER5.DSS	1,293	11,260	08-31-90	09:17
	TESTIN.ZIP	COOPER.I	1,420	10,068	05-17-89	14:07
		COOPER1.2	2,547	9,059	07-05-89	14:54
		COOPER1.295	27,740	59,566	08-30-90	15:36
		COOPER1.2P	51	68	03-14-90	11:57
		COOPER1.S	545	1,722	08-30-90	15:36
		COOPER5.2	2,592	9,344	03-24-88	11:10
		COOPER5.295	28,547	59,566	08-30-90	15:36
		COOPER5.2P	52	68	03-20-90	16:11
		FDA.DSS	7,121	52,220	08-30-90	15:50
		GODAMCAL.BAT	143	240	03-21-90	09:06
		GOEAD.BAT	174	278	04-27-90	14:12
		GOFDA2PO.BAT	215	737	04-13-90	15:35
		GOHEC1.BAT	43	44	08-31-90	09:02
		GOSID.BAT	217	465	03-20-90	16:44
		GOSIDEDT.BAT	157	366	10-13-89	15:21
		GOTEST.BAT	611	2,766	04-27-90	14:43
		SAMPLE1.DC	1,369	6,033	08-30-90	13:26
		SAMPLE1.E	823	1,871	08-30-90	15:42

Disk Volume Label	Disk File Name	Zipped File Name	Zipped File Size	Unzipped File Size	File Date	File Time
		SAMPLE1.S	1,538	5,563	08-30-90	15:40
		SAMPLE1.SE	174	274	12-17-87	16:48
		SAMPLE1A.I	1,755	6,362	11-17-87	09:14
		SAMPLE1B.I	701	2,159	11-17-87	09:14
		SAMPLE2.DC	1,363	6,059	08-30-90	13:27
		SAMPLE2.E	1,667	4,714	08-30-90	15:42
		SAMPLE2.S	1,667	5,868	08-30-90	15:40
		SAMPLE2.SE	261	467	09-27-89	10:57
		SAMPLE2.SEU	90	156	12-18-87	09:27
		SAMPLE2A.I	2,173	8,938	06-17-88	14:51
		SAMPLE3.DC	1,362	6,017	08-30-90	13:27
		SAMPLE3.E	464	849	08-30-90	15:43
		SAMPLE3.S	1,690	5,869	08-30-90	15:40
		SAMPLE3.SE	248	357	11-17-87	09:15
		SAMPLE3A.I	2,173	8,938	06-17-88	14:51
		SAMPLE4.DC	1,376	6,045	08-30-90	13:27
		SAMPLE4.E	474	987	08-30-90	15:43
		SAMPLE4.S	1,721	5,969	08-30-90	15:40
		SAMPLE4.SE	180	250	11-17-87	09:15
		SAMPLE4A.F	533	2,516	11-17-87	09:13
		SAMPLE4B.F	203	560	11-17-87	09:13
		SAMPLE5.F	786	3,306	03-20-90	16:46
		SAMPLE5.S	822	2,274	08-30-90	15:41
		SAMPLE5.SE	117	139	11-17-87	09:15
		SAMPLE6A.S	1,670	5,827	08-30-90	15:41
		SAMPLE6B.S	1,748	6,005	08-30-90	15:42
		SILVER.I	168	492	08-31-90	09:19
		SILVER1.2	655	3,252	01-07-88	12:19
		SILVER1.295	9,809	24,566	08-30-90	15:37
		SILVER1.2P	42	49	03-14-90	11:58
		SILVER1.S	226	902	08-30-90	15:37
		SILVER5.2	682	3,300	03-14-90	10:32
		SILVER5.295	8,482	24,566	08-30-90	15:37
		SILVER5.2P	48	54	03-20-90	16:17

Disk Volume Label	Disk File Name	Zipped File Name	Zipped File Size	Unzipped File Size	File Date	File Time
		TCREEK.GDB	57,911	416,442	09-22-89	16:50
FDAD2-SEP90						
	TESTOUT.ZIP	COOPER1.2O	10,848	57,556	08-30-90	15:36
		COOPER1.2PO	2,060	6,702	08-30-90	15:36
		COOPER5.2O	15,247	79,818	08-30-90	15:36
		COOPER5.2PO	2,071	6,726	08-30-90	15:36
		COOPERM.I	1,656	11,070	08-30-90	15:36
		FDA.DSS	7,121	52,220	08-30-90	15:50
		SAMPLE1.DCO	10,839	103,772	08-30-90	13:29
		SAMPLE1.EO	3,578	24,937	08-30-90	15:49
		SAMPLE1.SEO	1,499	8,701	08-30-90	14:07
		SAMPLE1.SO	15,205	117,040	08-30-90	15:48
		SAMPLE1C.I	2,173	8,938	08-30-90	14:07
		SAMPLE2.DCO	10,316	103,845	08-30-90	13:30
		SAMPLE2.EO	10,281	64,840	08-30-90	15:50
		SAMPLE2.SEO	1,530	7,987	08-30-90	14:07
		SAMPLE2.SO	17,738	136,551	08-30-90	15:48
		SAMPLE2B.I	2,24	8,938	08-30-90	14:07
		SAMPLE3.DCO	10,254	102,848	08-30-90	13:30
		SAMPLE3.EO	4,616	37,797	08-30-90	15:50
		SAMPLE3.SEO	1,351	4,838	08-30-90	14:07
		SAMPLE3.SO	14,386	116,594	08-30-90	15:48
		SAMPLE4.DCO	10,316	105,159	08-30-90	13:31
		SAMPLE4.EO	3,250	21,039	08-30-90	15:50
		SAMPLE4.SEO	824	3,618	08-30-90	14:07
		SAMPLE4.SO	14,726	120,949	08-30-90	15:48
		SAMPLE4C.F	605	3,444	08-30-90	14:07
		SAMPLE5.DF	136	1,230	08-30-90	15:48
		SAMPLE5.RDF	1,073	10,000	08-30-90	15:48
		SAMPLE5.SEO	728	2,654	08-30-90	15:48
		SAMPLE5.SO	6,103	51,967	08-30-90	15:48
		SAMPLE6A.SO	15,915	121,902	08-30-90	15:50
		SAMPLE6B.SO	15,302	124,239	08-30-90	15:50
		SILVER1.2O	7,179	42,387	08-30-90	15:37

Disk Volume Label	Disk File Name	Zipped File Name	Zipped File Size	Unzipped File Size	File Date	File Time
		SILVER1.2PO	1,607	4,372	08-30-90	15:37
		SILVER5.2O	6,455	38,017	08-30-90	15:37
		SILVER5.2PO	1,605	4,390	08-30-90	15:37
		SILVERM.I	169	492	08-30-90	15:37
FDA DOC 90						
	COED.DOC		-	118,769	3-02-87	16:17
	LIST.DOC		-	34,296	9-05-86	15:50
	PKZ101.EXE		-	131,517	7-21-89	1:01
GSS 90 #1						
	CGIPREP.ZIP	CGIPREP	2,783	8,920	05-01-89	10:49
	DRIVERS.ZIP	DRIVERS.EXE	5,095	10,016	03-17-89	08:54
	FONTDRV.ZIP	FONTDRV.SYS	6,716	11,616	02-20-89	16:57
	GSSCGI.ZIP	GSSCGI.SYS	25,058	37,284	02-14-89	11:41
	HPGLPLTR.ZIP	HPGLPLTR.SYS	17,075	33,988	05-02-89	01:07
	HPLASERP.ZIP	HPLASERP.SYS	24,822	47,192	05-24-89	15:24
	HPPLOT.ZIP	HPPLOT.SYS	15,203	31,388	05-02-89	01:08
	HREGA.ZIP	HREGA.SYS	27,621	43,012	04-03-89	11:10
	HRVGA.ZIP	HRVGA.SYS	26,770	41,744	12-15-88	15:28
	IBMBW.ZIP	IBMBW.SYS	22,719	34,620	05-04-88	19:34
	IBMCO.ZIP	IBMCO.SYS	24,161	37,720	05-04-88	19:34
	IBMEGA.ZIP	IBMEGA.SYS	27,051	42,076	09-20-88	17:11
	IBMVGA12.ZIP	IBMVGA12.SYS	26,747	41,828	09-20-88	17:30
	INSTFONT.ZIP	INSTFONT.EXE	8,316	15,106	02-01-89	09:30
	META.ZIP	META.SYS	13,049	30,268	05-04-88	19:34
	MSMOUSE.ZIP	MSMOUSE.SYS	2,930	5,768	10-06-88	11:50
GSS 90 #2						
	COMPAQ3.ZIP	COMPAQ3.SYS	20,776	32,056	07-11-87	12:09
	EPSONX.ZIP	EPSONX.SYS	23,202	40,588	05-22-89	16:25
	HERCBW.ZIP	HERCBW.SYS	23,526	37,224	05-04-88	19:34
	HERCINCO.ZIP	HERCINCO.SYS	25,341	40,748	05-04-88	19:34
	HIPLOTTR.ZIP	HIPLOTTR.SYS	13,949	28,280	03-24-89	16:17
	HIRESEGA.ZIP	HIRESEGA.SYS	27,607	42,760	09-20-88	14:56
	HPDJET.ZIP	HPDJET.SYS	27,907	52,652	05-22-89	23:39
	IBMAFH.ZIP	IBMAFH.SYS	32,388	56,864	05-25-89	15:17

Disk Volume Label	Disk File Name	Zipped File Name	Zipped File Size	Unzipped File Size	File Date	File Time
	IBMAFL.ZIP	IBMAFL.SYS	30,801	51,688	05-25-89	16:00
	IHW12X16.ZIP	IHW12X16.FNT	2,502	8,804	04-10-89	16:26
	IHW12X24.ZIP	IHW12X24.FNT	2,142	13,140	01-16-89	09:43
	IHW12X48.ZIP	IHW12X48.FNT	2,628	26,148	02-15-89	09:19
	IHW12X8.ZIP	IHW12X8.FNT	1,388	4,468	01-16-89	09:25
	IHW18X24.ZIP	IHW18X24.FNT	2,648	26,148	01-16-89	09:54
	IHW24X24.ZIP	IHW24X24.FNT	4,927	26,148	04-12-89	08:08
	IHW6X16.ZIP	IHW6X16.FNT	1,770	8,804	01-16-89	09:21
	IHW6X8.ZIP	IHW6X8.FNT	1,185	2,300	01-17-89	14:54
	PS2MOUSE.ZIP	PS2MOUSE.SYS	2,820	5,640	10-	14:06
	T3100.ZIP	T3100.SYS	21,678	33,388	12-17-87	16:30
GSS 90 #3						
	ADAGE30.ZIP	ADAGE30.SYS	27,358	51,180	12-11-86	14:28
	CALCOMPA.ZIP	CALCOMPA.SYS	3,907	6,908	03-24-89	15:09
	CALCOMPB.ZIP	CALCOMPB.SYS	3,680	6,616	02-28-89	12:03
	CALPLOT.ZIP	CALPLOT.SYS	16,485	34,980	06-13-88	09:59
	CANL8II.ZIP	CANL8II.SYS	24,110	45,796	05-23-89	03:32
	CGCGI.ZIP	CGCGI.SYS	14,554	25,356	09-29-88	11:17
	CGI6300B.ZIP	CGI6300B.SYS	23,479	37,032	08-23-88	14:45
	CGI6300C.ZIP	CGI6300C.SYS	25,408	40,768	09-15-88	10:44
	CGIDGIS.ZIP	CGIDGIS.SYS	18,235	30,496	05-17-89	16:22
	CGISTUB.ZIP	CGISTUB.SYS	243	268	02-14-89	12:00
	CTOUCH.ZIP	CTOUCH.SYS	3,781	6,836	10-04-88	15:25
	DIAB150.ZIP	DIAB150.SYS	23,657	42,776	05-27-87	10:51
	DICONIXH.ZIP	DICONIXH.SYS	24,228	44,076	02-02-87	16:53
	DICONIXL.ZIP	DICONIXL.SYS	23,966	42,220	02-02-87	16:53
	EPEX1000.ZIP	EPEX1000.SYS	25,648	43,292	05-27-89	20:06
GSS 90 #4						
	CGIPOST.ZIP	CGIPOST.SYS	15,430	30,940	05-02-89	10:58
	EPEX800.ZIP	EPEX800.SYS	25,522	43,148	05-25-89	08:53
	EPLX800.ZIP	EPLX800.SYS	23,146	40,668	05-22-89	16:00
	EPSONLQ.ZIP	EPSONLQ.SYS	27,981	52,616	05-24-89	09:08
	EPSONLQC.ZIP	EPSONLQC.SYS	27,303	47,208	05-22-89	17:29
	HPPJ180.ZIP	HPPJ180.SYS	25,240	44,216	05-22-89	23:07

Disk Volume Label	Disk File Name	Zipped File Name	Zipped File Size	Unzipped File Size	File Date	File Time
	HPPJ90.ZIP	HPPJ90.SYS	24,859	42,632	05-23-89	00:44
	IBMGIJOY.ZIP	IBMGIJOY.SYS	3,516	6,708	01-27-86	18:03
	IBMGPR.ZIP	IBMGPR.SYS	23,905	42,096	02-02-87	16:54
	IBMPRCOL.ZIP	IBMPRCOL.SYS	21,045	39,724	05-27-87	12:05
	IBMPRO.ZIP	IBMPRO.SYS	23,630	41,316	05-23-89	09:42
	IBMPROII.ZIP	IBMPROII.SYS	26,637	47,076	05-22-89	16:05
GSS 90 #5						
	IBMQW2.ZIP	IBMQW2.SYS	26,684	47,184	05-23-89	00:16
	IBMQW3.ZIP	IBMQW3.SYS	24,752	44,886	05-26-87	07:56
	IBMVGA11.ZIP	IBMVGA11.SYS	23,691	36,460	05-04-88	19:34
	IBMVGA13.ZIP	IBMVGA13.SYS	23,523	38,400	08-17-88	17:02
	IBMXL24.ZIP	IBMXL24.SYS	27,945	52,564	05-23-89	00:55
	IS30.ZIP	IS30.SYS	4,345	12,848	03-17-86	14:15
	LASERJET.ZIP	LASERJET.SYS	27,100	49,072	02-16-89	01:59
	MOUSESYS.ZIP	MOUSESYS.SYS	3,362	6,256	02-28-89	12:18
	NECP5.ZIP	NECP5.SYS	27,942	52,548	05-24-89	10:46
	NECP5XL.ZIP	NECP5XL.SYS	27,249	47,128	05-22-89	21:31
	OKID290.ZIP	OKID290.SYS	26,277	44,424	05-23-89	02:21
	QUIETJET.ZIP	QUIETJET.SYS	23,939	43,972	02-03-87	09:06
GSS 90 #6						
	PS_COB.ZIP	PS_COB.FNT	1,386	3,013	04-01-89	12:47
	PS_COO.ZIP	PS_COO.FNT	1,535	3,013	04-01-89	12:47
	PS_HV.ZIP	PS_HV.FNT	1,648	3,013	04-01-89	12:51
	PS_HVB.ZIP	PS_HVB.FNT	1,626	3,013	04-01-89	12:48
	PS_HVO.ZIP	PS_HVO.FNT	1,688	3,013	04-01-89	12:49
	PS_TIB.ZIP	PS_TIB.FNT	1,654	3,013	04-01-89	12:50
	PS_TII.ZIP	PS_TII.FNT	1,723	3,013	04-01-89	12:49
	PS_TIR.ZIP	PS_TIR.FNT	1,613	3,013	04-01-89	12:50
	ROLAND.ZIP	ROLAND.SYS	11,817	23,800	07-28-87	22:10
	SUM1812.ZIP	SUM1812.SYS	3,403	6,316	04-04-89	17:50
	SUMMATB.ZIP	SUMMATB.SYS	5,221	11,112	03-06-89	08:14
	TEK4695.ZIP	TEK4695.SYS	23,658	42,808	05-27-87	12:12
	THINKJET.ZIP	THINKJET.SYS	25,765	46,716	05-23-89	13:17
	TOSHIBA.ZIP	TOSHIBA.SYS	27,362	52,576	05-23-89	17:15

Disk Volume Label	Disk File Name	Zipped File Name	Zipped File Size	Unzipped File Size	File Date	File Time
	VERSATEC.ZIP	VERSATEC.SYS	25,011	51,652	07-11-87	11:56
	VISMOUSE.ZIP	VISMOUSE.SYS	3,305	6,208	10-03-88	16:22
	XER4045.ZIP	XER4045.SYS	23,416	44,188	05-23-89	03:59